

Overview

Scope of this Document

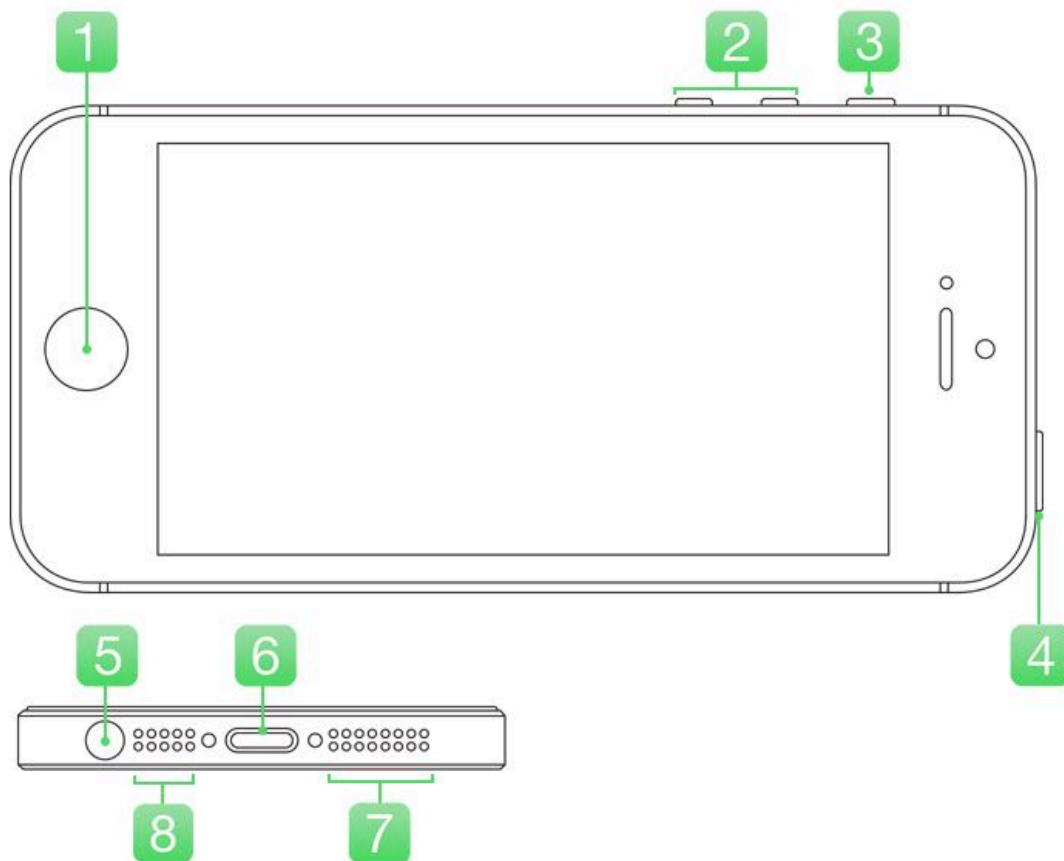
This Service Guide provides troubleshooting steps, take-apart procedures, and other information about iPhone SE. Other iPhone models are covered in separate guides.

Features



Available in silver, gold, rose gold, and space gray, iPhone SE features:

- A9 chip with 64-bit architecture with built-in M9 motion coprocessor
- Touch ID
- Ultrafast LTE wireless
- 12-megapixel iSight camera
- Apple Pay
- iOS 9



1. Touch ID sensor
2. Volume up/down
3. Ring/Silent
4. On/Off
Sleep/Wake
5. 3.5mm headphone jack
6. Lightning connector
7. Built-in speaker
8. Microphone

Service Considerations

Important: Before servicing a device, ensure that the customer has disabled Find My iPhone in Settings. For more information, refer to [HT201365: Find My iPhone Activation Lock](#).

Touch ID

Touch ID secures the device from unauthorized access. Not everyone will be able to use the fingerprint scanner feature. Some people (less than 1% of the population) lack the impedance necessary to activate biometric devices. Do not submit these devices for repair. Have the customer try to activate a known-good similar device, if possible, to verify if they fall within this very small minority of users. Refer to [TP1062: Touch ID](#) for more details.



Tools and Fixtures

To open iPhone SE, use only the Universal Display Removal Fixture. Other fixtures that open the display to a wider angle may damage the Home button flex.



Note: iPhone SE uses the same repair trays as iPhone 5s.

Screws replaced during a repair must be tightened to a specific torque value. There are two (2) iPhone Torque Drivers to set screws to the correct torque value. Use only the driver called for in the take-apart instructions. The correct driver is also noted in the screw diagram section of [TP1431: Internal View, Parts List, Screw Diagram](#).

1. iPhone Torque Driver (black), 0.35 kg-fcm (923-0248)
2. iPhone Torque Driver (blue), 0.65 kg-fcm (923-0448)



Battery Adhesive

Refer to [RP1134: Battery](#) for more details.



iOS

Overview

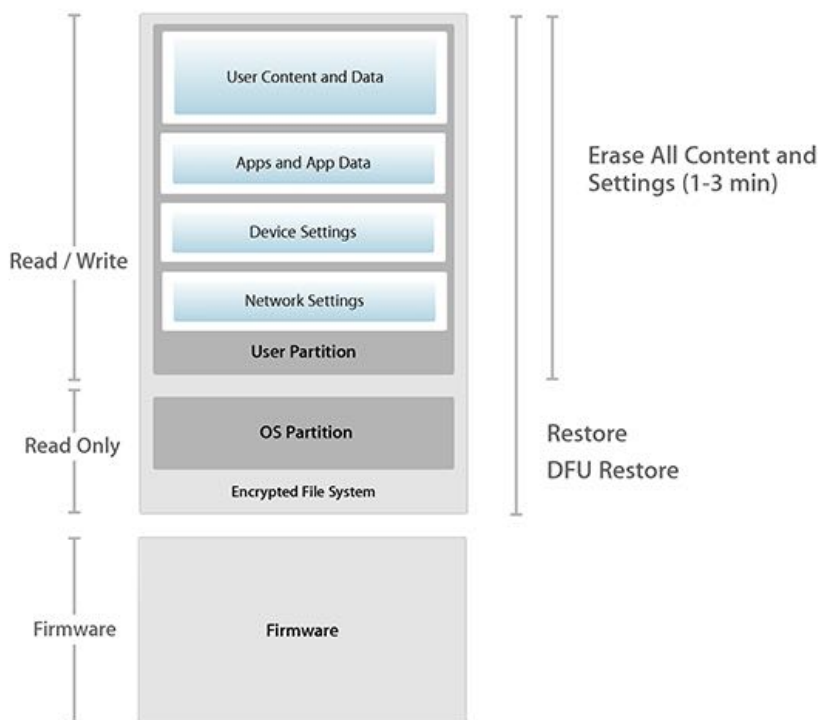
iOS 11 is the latest mobile operating system for iPhone, iPad, and iPod touch. iOS 11 is compatible with iPhone 5s or later, iPad mini 2 or later, iPad Air, iPad (5th and 6th generation), iPad Pro, and iPod touch (6th generation).

Service Considerations

Restore Types and File System

If the device is connected to iTunes, then updating the software may resolve an issue without erasing content and settings. If updating the software does not work, then it may be necessary to restore the device, which will erase all content and settings. Most issues reside in the read/write portion of the file system; the read-only portion cannot be modified by the user.

DF Reset and DFU Restore are not necessary to troubleshoot iOS devices. Restore and Recovery Mode Restore take less time to accomplish the same result. If the device will not go into Recovery Mode or will not charge, then follow the troubleshooting steps in the Service Guide.



Troubleshooting

Refer to article [TP880: Common Troubleshooting Procedures](#) for more details.

To isolate a software issue, use the following steps.

1. Have the user create a backup (using either iCloud or iTunes) so that the data on the device is saved. Refer to article [TP322: Back Up User Data](#) for more details.
2. Update to the latest software.
3. Restart the device.
4. Erase all contents and settings (Settings > General > Reset > Erase All Content and Settings).
5. Set up the device as new, without restoring from backup.
6. Test the device hardware and iOS for the original issue. If the issue cannot be reproduced, do not replace the device.
7. Restore from backup. If restoring from either backup (iCloud or iTunes) causes the software issue to return, then there is no reason to restore from the other backup method as it will lead to the same result.

iOS Diagnostics

Search for article “AST 2 for iOS Reference Guide - Table of Contents” for more information.

Apple Service Toolkit 2 (AST 2) is a cloud-based diagnostic system to help technicians triage and verify repairs for most Apple devices.

AST 2 for iOS currently supports Apple devices running iOS 8.1 or later and Apple Watch.

Some diagnostic tests and tools in AST 2 require the device under test to be running iOS 9 or later.

Apple Apps

Apple apps may be hidden from the home screen. These apps are not deleted as they are part of iOS. These apps can be restored by searching the App Store and touching the Download button.

Music > Optimize Storage

This feature will automatically remove songs that have not been played in a while.

Battery

Refer to article [HT201264: About the battery usage on your iPhone, iPad, and iPod touch](#) and [HT205234: Use Low Power Mode to save battery life on your iPhone](#) for detailed information.

Low Power Mode

This feature allows users to increase battery life by reducing some functionality. Email fetch, Hey Siri, Background App Refresh, Automatic Downloads, and some visual effects are reduced or turned off.

Low Power Mode can be turned on manually in Settings > Battery.

When Low Power Mode is active, the battery icon will appear yellow and the battery percentage will be displayed.

Battery Usage

Settings > Battery > Battery Usage displays battery usage by app.

This feature can display the percentage of battery use by day or week.

The Home screen and Lock screen will usually have the highest usage.

Apps that have been given permission to run in the background will be noted as “background activity.”

Wi-Fi Assist

Refer to article [HT205296: About Wi-Fi Assist](#) for more information.

Wi-Fi assist allows a device running iOS 9 or later to stay connected to the Internet even with a poor Wi-Fi connection. If the Wi-Fi signal strength drops too low, then the device will seamlessly switch to cellular data.

Wi-Fi Assist is turned on by default.

Any iOS device that has a cellular data plan and is running iOS 9 or later can use Wi-Fi assist, except for iPhone 4s, iPad 2, iPad (3rd generation), and iPad mini (1st generation).

iTunes



iTunes may be used to restore or update a device to iOS 11. General system requirements are listed on the download page. Download iTunes from www.apple.com/itunes/download/.

An Apple ID is required for some iOS features. Refer to article [TP318: Apple ID](#) for specific features and Apple ID troubleshooting.

Back Up User Data

Back Up User Data

Before troubleshooting a user's device, verify that the data is backed up to iCloud or to iTunes on the user's computer.

Note: If restoring user data from either backup method (iCloud or iTunes) causes an issue to return, there is no reason to restore from the other backup method as it will lead to the same result.

iCloud

1. On the Home screen, tap Settings.
2. Tap on AppleID
3. Tap iCloud.
4. Tap Manage Storage.
5. Verify the latest backup.

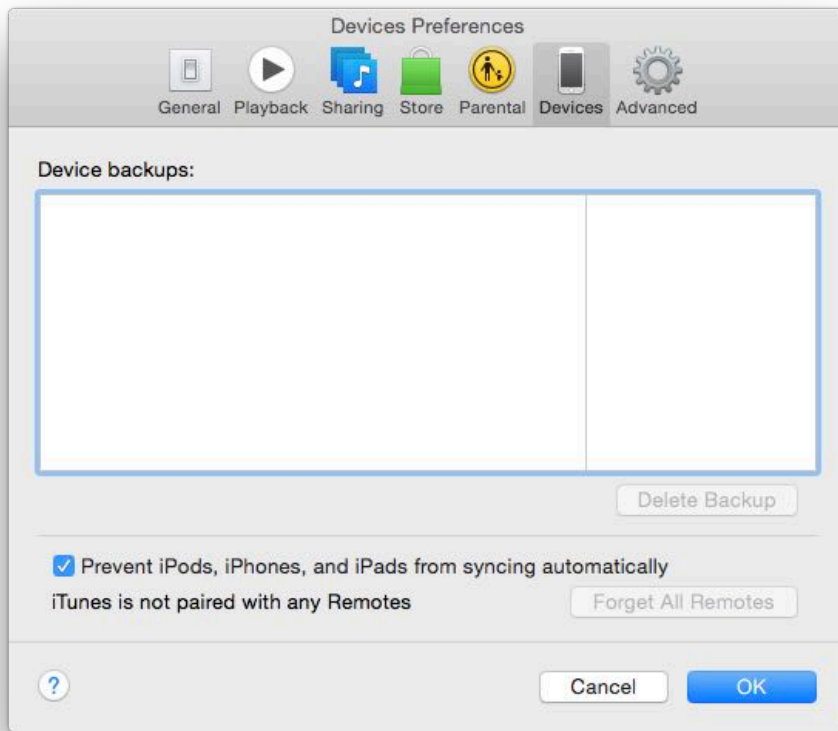


Learn more about iCloud at www.apple.com/icloud. Refer to article [HT207428: What does iCloud back up?](#)

iTunes on user's computer

1. Connect the user's device to the user's computer.
2. Open iTunes.
3. Select Preferences.
4. Select Devices.
5. Verify the latest backup in the "Device backups" pane.

Important: To avoid syncing a user's device to a test computer, go to iTunes > Preferences > Devices and select "Prevent iPods, iPhones, and iPads from syncing automatically."



Also refer to the following articles:

- [HT203977: How to back up your iPhone, iPad, and iPod touch](#)
- [HT201274: How to erase your iPhone, iPad, or iPod touch](#)
- [HT203271: If your iTunes backup couldn't be completed or you can't restore from a backup](#)

Cleaning Procedures

Contents

This article includes the following sections:

- Required Tools
- Dock or Lightning Connector - iPhone, iPad, iPod
- Headphone/Headset Jack
- Speaker and Microphone
- Receiver - iPhone only
- SIM Tray
- Loop Holder - iPod touch (5th generation) only
- Lightning Connector - AirPods Charging Case
- Internal AirPods Charging Case
- Sanitize AirPods

Required Tools

- Lighted otoscope (or lighted magnifying glass)
- ESD-safe brush (922-9918)
- ESD-safe tweezers
- Microfiber cloth
- Compressed air (for AirPods lightning connector only)
- Foam swab
- Isopropyl alcohol (IPA) wipe



Caution: Never use compressed air to clean any part of an iPhone, iPad, or iPod, as this can damage delicate components.

Dock or Lightning Connector - iPhone, iPad, iPod

Debris in the dock or Lightning connector can cause performance issues, such as:

- Unable to charge battery.
- Device not recognized by iTunes/computer/accessory.

Cleaning Procedure:

1. Power off the device.
2. Use a lighted otoscope or magnifying glass to inspect for debris.
3. Use an ESD-safe brush to delicately brush out lint or debris. Be careful not to damage any metal contacts.
Note: Avoid brushing debris into the speaker or microphone, if present, on either side of the dock or Lightning connector.
4. If needed, use ESD-safe tweezers to carefully pull out any large pieces of lint or debris. Be careful not to damage any metal contacts.



Headphone/Headset Jack

Debris in the headphone/headset jack can cause audio or functional issues, such as:

- Device is stuck in headphone mode and no audio is heard from receiver (if present) or speaker.
- Headphone audio is distorted (static or crackles) or is not functioning.
- Headphone audio is only heard in one channel.
- Headphone microphone has distorted sound or no sound.
- Headphone connector will not fit all the way into headphone/headset jack.



Warning: Do not use long metal tools (such as screwdrivers or dental picks) while cleaning inside the headphone/headset jack, as this could lead to battery puncture.

1. Use a lighted otoscope or magnifying glass to inspect for debris.
2. Use an ESD-safe brush to brush out lint or debris. Use just enough bristles to fit inside the headphone/headset jack. Twist the bristles to loosen and lift out debris.



Speaker and Microphone

Debris blocking the speaker and microphone openings can cause audio performance issues, such as:

- Low or distorted volume audio from the speaker.
- Muffled, low volume, or distorted audio recorded from the microphone.

Cleaning Procedure:

1. Use an ESD-safe brush to gently brush cover openings of the speaker and/or microphone, if present.
Note: Avoid brushing debris into the dock or Lightning connector by brushing debris away from the connector.



Receiver - iPhone only

Debris blocking the receiver opening can cause audio performance issues, such as:

- Muffled, low volume, or distorted audio through the receiver.

Cleaning Procedure:

1. Inspect the receiver for loose debris.
2. Use an ESD-safe brush to **gently** brush the cover mesh in the receiver opening to remove debris.
Caution:
 - Use extreme care to avoid damaging the microphone embedded within the receiver opening.
 - Avoid using large sweeping motions across the glass, as this could lead to scratches.
3. Use a microfiber cloth to clean away the loosened debris.



SIM Tray

Dirt and debris around SIM tray slot of the device can appear dirty and cause issues, such as:

- Difficulty opening/closing SIM tray.
- Dirt and debris entering device when SIM tray is ejected and removed.

1. Eject SIM tray from device.



2. Use alcohol wipe to gently wipe around edges of SIM tray to remove dirt from edges.
3. Use alcohol wipe to gently wipe around edges of SIM tray slot on device to remove dirt from edge.
4. Inspect to verify dirt has been removed.
5. If any dirt still remains, use alcohol wipe and repeat steps 2 and 3.



Loop Holder - iPod touch (5th generation) only

Debris blocking the loop holder can cause functional issues, such as:

- Loop holder does not respond to touch.
 - Loop holder does not open/close.
1. Use an ESD-safe brush to delicately brush out lint or debris. If needed, use ESD-safe tweezers to pull out any large pieces of lint or debris.



Lightning Connector - AirPods Charging Case

Debris in the Lightning connector can cause this performance issue:

- Unable to charge the case battery.

Cleaning Procedure:

1. Use a lighted otoscope or magnifying glass to inspect for debris.
2. Blow away any loose debris with compressed air.



3. If debris still remains, use an ESD-safe brush to delicately brush out debris.



4. If needed, use ESD-safe tweezers to carefully pull out any large pieces of debris.
Caution: Be careful not to damage any metal contacts.
5. Use compressed air to remove any remaining loose debris.
6. Clean the outside of the case with a microfiber cloth.



Internal AirPods Charging Case

Contaminated contacts or debris in the AirPods wells can cause this performance issue:

- Unable to charge the AirPods

Caution: Do not use compressed air to clean inside the AirPods wells as this can cause debris to get stuck behind the contacts.

1. Use a lighted otoscope or magnifying glass to inspect the AirPods wells for debris and the contacts for contamination.



2. Open an IPA wipe packet and insert the foam end of the swab.



3. Press the foam end of the swab inside the IPA wipe packet to transfer enough alcohol to moisten it.



4. Use the moist foam swab to very gently rub the contacts in a vertical up-and-down motion.
Caution: To protect the spring finger contacts, do not twirl the swab or excessively force it on the contacts.



5. Gently clean out any other debris in the wells or inside the charging case.



Sanitize AirPods

1. Place AirPods on a clean surface.
2. Use an IPA cleaning wipe to clean the surface of each AirPods.

Important: Avoid getting any liquid on the microphone and speaker meshes and ports marked in the image below.



Accessories

Accessories included with iPhone 5, 5c, 5s, and SE:

- Lightning to USB Cable (1m)
- Apple EarPods with Remote and Mic
- Apple 5W USB Power Adapter

Additional accessories (not included):

- Lightning to USB Cable (2m)
- Lightning to USB Cable (0.5m)
- Lightning to Micro USB Adapter
- Lightning to 30-pin Adapter
- Lightning to 30-pin Adapter (0.2m)
- Lightning Digital AV Adapter
- Lightning to VGA Adapter
- Lightning to SD Card Camera Reader
- Lightning to USB Camera Adapter
- iPhone Lightning Dock
- iPhone 5s Dock (also compatible with iPhone 5 and SE)
- iPhone 5c Dock
- iPhone 5s Case* (also compatible with iPhone 5 and SE)
- iPhone 5c Case*

***Service Strategy for Leather and Silicone Cases:** Leather and silicone cases are available as out-of-warranty service parts. To identify conditions which may affect warranty coverage, refer to article [SM268: Visual/Mechanical Inspection \(VMI\) Guide for Apple Cases and Covers](#).

Accessory resources: Use the Apple Online Store and other resources to determine compatibility. For details regarding iPhone accessories, refer to store.apple.com/us/iphone/iphone-accessories.

Lightning to USB Cable

- USB 2.0
- Connects iPhone, iPad, or iPod (with Lightning connector) to a computer's USB port to sync and charge, or to the Apple USB Power Adapter to charge from a wall outlet
- Reversible design



Apple EarPods with Remote and Mic

- Designed to rest comfortably inside a variety of ear types
- Built-in remote to adjust volume, control music and video playback, and answer or end calls on iPhone
- Speakers inside are designed to minimize sound loss and maximize sound output
- The remote and mic are supported by all models of iPod, iPhone, and iPad (not all models support volume up/down functions)



Apple 5W USB Power Adapter

- Ultracompact design
- Fast, efficient charging
- Works with any iPhone, iPad mini, or iPod model



Lightning to Micro USB Adapter

- Connects devices with a Lightning connector to micro USB cables and chargers to sync and charge your device
- Ultracompact, durable design



Lightning to 30-pin Adapter

- Connect devices with a Lightning connector to many 30-pin accessories*
- Supports analog audio output, USB audio, as well as syncing and charging
- Video output not supported

*Some 30-pin accessories are not supported



Lightning to 30-pin Adapter (0.2m)

- Connect devices with a Lightning connector to many 30-pin accessories*
- Supports analog audio output, USB audio, as well as syncing and charging
- Video output not supported

*Some 30-pin accessories are not supported



Lightning Digital AV Adapter

- Supports mirroring of what is displayed on the device screen to a VGA-equipped TV, display, projector, or other compatible display in up to 1080p HD
- Requires an HDMI cable (sold separately) for connection to a TV or projector
- Supports both video and audio output



Lightning to VGA Adapter

- Supports mirroring of what is displayed on the device screen to a VGA-equipped TV, display, projector, or other compatible display in up to 1080p HD
- Requires a VGA cable (sold separately) for connection to a TV or projector
- Does not support audio output



Lightning to SD Card Camera Reader

- Download photos and videos from a digital camera
- Supports standard photo formats, including JPEG and RAW, along with SD and HD video formats, including H.264 and MPEG-4
- Compatible with iPhone 5c and newer



Lightning to USB Camera Adapter

- Download photos and videos from a digital camera
- Supports standard photo formats, including JPEG and RAW, along with SD and HD video formats, including H.264 and MPEG-4
- Compatible with iPhone 5c and newer



iPhone Lightning Dock

- Connects iPhone to a computer to sync and charge, or to the Apple USB Power Adapter to charge from a wall outlet using a Lightning to USB Cable
- 3.5 mm audio port, supports headphones with remote control or line-out
- Available in a variety of colors
- Compatible with iPhone 5 and newer



iPhone 5s Dock

- Holds iPhone upright as it syncs or charges
- Convenient audio line-out port that connects to powered speakers
- Compatible with iPhone 5, 5s, and SE
- USB cable and 3.5 mm audio cable sold separately



iPhone 5c Dock

- Holds iPhone upright as it syncs or charges
- Convenient audio line-out port that connects to powered speakers
- USB cable and 3.5 mm audio cable sold separately



iPhone 5s Case

- Leather exterior with soft microfiber lining
- Compatible with iPhone 5, 5s, and SE
- Available in a variety of colors



iPhone 5c Case

- Silicone exterior with soft microfiber lining
- Precisely drilled holes align with the speakers
- Six colors: white, pink, yellow, blue, green, and black



AirPods - Overview and Visual/Mechanical Inspection (VMI) Guide

This article contains the following sections

- Overview
- Service Considerations
- AirPods Charging Case Button Functions
- Functional Test
- Visual/Mechanical Inspection
- Troubleshooting

Overview

AirPods



- Compatible with:
 - iPhone, iPad, and iPod touch models with iOS 10 or later
 - Apple Watch models with watchOS 3 or later
 - Mac models with macOS Sierra or later
 - Non-Apple products, refer to article [HT207010: Use your AirPods](#) for more information.
- Seamless switching between devices

AirPods Charging Case

- Built-in battery
- Charges AirPods



Service Considerations

Prior to troubleshooting, refer to [TP320: Cleaning Procedure](#) to clean the AirPods and charging case.

For more information about AirPods setup, controls, Siri, and other uses, refer to article [HT207010: Use your AirPods](#).

When troubleshooting any issues with AirPods, refer to article [HT207974: Get help with your AirPods](#). If AirPods need service, search GSX for “AirPods Service Process” for more information.

When replacing either the left or right AirPod, or both AirPods, refer to article [HT207827: Replace an AirPod](#) to make sure the replacement AirPod(s) are setup correctly.

Do not replace a case for connectivity, pairing, microphone, or audio issues; a replacement case will not resolve these issues. The case has these functions only:

- Charging

- Entering setup mode
- Resetting the AirPods

Only replace a charging case for the following reasons:

- Known-good AirPods will not charge in the case
- Charging case does not hold a charge
- The LED does not function
- The reset button will not enter setup mode or reset the AirPods

Configure AirPods using software settings on the connected iPhone by tapping the “i” in **Settings > Bluetooth** for the following functions:

- Double-tap
 - Siri
 - Play/Pause
 - Next Track
 - Previous Track
 - Off
- Automatic Ear Detection
 - On/off
- Microphone
 - Automatically Switch AirPods
 - Always Left AirPods
 - Always Right AirPods

Charging case status light colors:

- Flashing white when in setup mode
- Flashing amber when AirPods in the case are not connected to each other
- Steady amber when charging
- Steady green when fully charged
- Off when the case has been plugged in to a charger for longer than six hours

Each AirPods contains an independent battery. In certain use cases, it is possible for each AirPods to have different charge levels.

		Green	Amber
Charging case connected to a charger	Charging case without AirPods inside	Charging case is > 95% charged	Charging case is < 95% charged
	Charging case with AirPods inside	Charging case and both AirPods are > 95% charged	Charging case and/or AirPods are < 95% charged
Charging case not connected to a charger	Charging case without AirPods inside	Charging Case is > 95% charged	Charging Case is < 40% charged
	Charging case with AirPods inside	Both AirPods are > 95% charged	One or both AirPods are < 95% charged

AirPods Charging Case Button Functions

The AirPods must be in the case for these functions.

- **Enter discovery mode:** Hold the charging case button until the LED flashes white. This will allow the AirPods to be paired to a new device or to setup the AirPods.
- **Restore the AirPods to factory default settings:** Hold the charging case button (up to 15 seconds) until the LED flashes amber. The LED will flash white until the amber light appears.

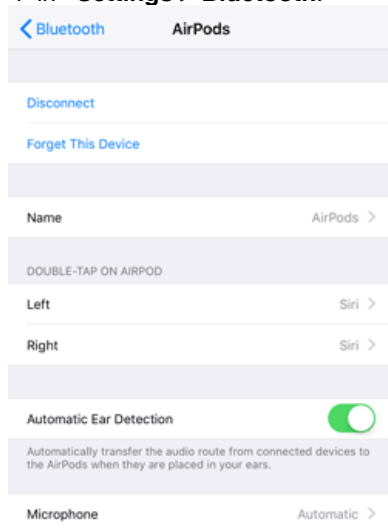
Functional Test

Test Pairing and Bluetooth

1. Setup AirPods to a known-good device. Open the lid and press and hold the button on charging case until the LED flashes white, then hold close to an awake known-good device. Follow on-screen instructions.
2. Check in **Settings > Bluetooth** to verify AirPods are connected. **Note:** The charging case should be open or one or both AirPods should be out of the case.
3. Place AirPods in ears.
4. Listen to music stored on the iPhone to verify proper audio routing. **Note:** Content from streaming services should not be used for this test.

Test Touch Gesture

1. Double-tap either AirPods to access Siri. **Note:** Check the double-tap settings on the connected iPhone by tapping the “i” in **Settings > Bluetooth**.



Test Sound Quality

1. Listen to music stored on the iPhone for sound quality. **Note:** Content from streaming services should not be used for this test.
2. Set microphone to Always Left AirPod in **Settings > Bluetooth**.
3. Make a test phone call to an approved toll-free number. During the call, verify the sound quality of the receiver and the microphone.
4. Set microphone to Always Right AirPod and repeat step 3.

Test Charging

1. Place both AirPods in the charging case.
2. Connect a Lightning cable to the charging case. Connect the other end of the Lightning cable to a USB power adapter or the USB port on a computer.
3. Verify that the LED on the charging case turns solid amber (or solid green, if case and AirPods are both already fully charged; see table above for more information).

Visual/Mechanical Inspection

Device Wear

The warranty does not apply to cosmetic damage (including, but not limited to, scratches, dents, and broken plastic on ports), or to defects caused by normal wear and tear or otherwise due to the normal aging of the device. If no hardware issue is present and cosmetic damage is the only reported issue, then deny a repair or replacement.

	Debris or discoloration	Debris or discoloration
Device Wear		

Service Eligibility Guidelines

The chart below outlines the service eligibility of different types of damage.

Eligible for Warranty Service	<p>If the failure for which the user is seeking service is described in this section, then a replacement is eligible under warranty service regardless of the presence of accidental damage.</p> <ul style="list-style-type: none"> • Swollen battery: Including deformation or case separation due to a swollen battery.
Eligible for Out-Of-Warranty Service (Returnable Damage)	<p>If the damage (or combination of damages) for which the user is seeking service is described in this section, then the device is eligible for out-of-warranty service.</p> <ul style="list-style-type: none"> • Damaged Lightning connector: Foreign material that cannot be removed, including broken accessories, bent pins, broken plastic, or a bent bezel. <div> <div>Cracks</div>  </div> <div> <div>Dents</div>  </div> <div> <div>Liquid damage or corrosion</div>  </div> <div> <div>Liquid damage or corrosion</div>  </div>
Ineligible for Service (Nonreturnable Damage)	<p>If the damage for which the user is seeking service is described in this section, then the device is ineligible for service. Return the device to the user.</p> <ul style="list-style-type: none"> • Disassembled unit or missing parts: To receive service, the unit must have all functional parts and must be assembled. • Counterfeit parts; damage caused by counterfeit parts, third-party parts, or unauthorized modifications: Damage caused by unauthorized modifications is ineligible for warranty or out-of-warranty service. • Catastrophic damage: Includes units that are destroyed or forcibly separated into multiple pieces. 

Troubleshooting

Accessories

- [Accessory Issues](#)
- [Missing or Lost Audio Accessory](#)

Connectivity

- [Control Issues](#)
- [Wireless Connection Issues](#)

Mechanical

- [Physical Damage Issues](#)
- [Unusual Heat or Odor](#)

Power

- [Power Issues](#)

Sound

- [Microphone Issues](#)
- [Sound Issues](#)

Additional Resources

iPhone Product Page

iPhone features and technology.

www.apple.com/iphone

iPhone Support Page

Information, guides, assistants, and troubleshooting tips.

www.apple.com/support/iphone

iPhone Tech Specs

System requirements, supported languages, media formats, and technical details.

support.apple.com/specs/iphone

iPhone User Guide

Easy to access, in-depth usage instructions for features and settings.

support.apple.com/manuals/iphone

iTunes Support Page

www.apple.com/support/itunes

Apple Batteries

www.apple.com/batteries

Micro-Inspection Procedure

First Steps:

1. Perform Visual/Mechanical Inspection (VMI) prior to Micro-Inspection.
2. Remove the black tape from the logic board. **Note:** Disconnect the display assembly and the Lightning and battery flexes before removing the tape.

Do not perform Micro-Inspection for mail-in repairs, except when the externally-visible liquid contact indicator is triggered, damaged, or missing.

For non mail-in repairs, perform Micro-Inspection when an iPhone SE does not turn on.

The examples below are intended to be a guide. Do not limit inspections to only the areas shown. Use them to assist in the inspection of the whole device for unauthorized modifications. Inspect the entire iPhone and document all signs of modification.

Unauthorized modifications may include:

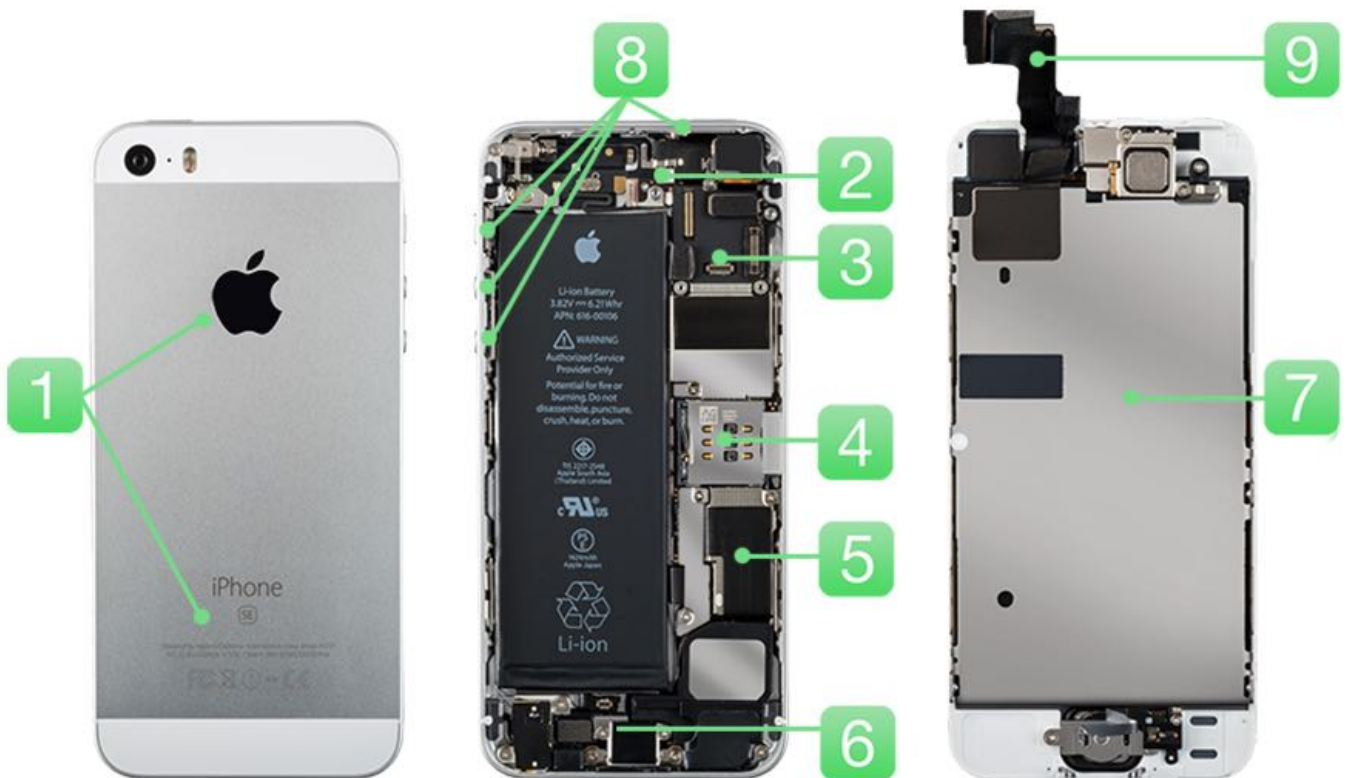
- Cut cables or flexes
- Pierced cables or flexes
- Damaged connectors or components
- Removed connectors or components
- Missing serial numbers
- Compressed or missing springs

Use a USB microscope with 20X-200X magnification, capable of capturing a close-up image of each identified area. **Note:** Component examples shown below. Refer to article [TP960: USB Microscope Camera Setup](#) for setup instructions.

Important: Unauthorized modifications can alter a device's functionality and/or capability. A device with damage caused by unauthorized modifications is no longer eligible for service.

Note to Carriers/AASPs: To process repair and document test failure, use part number 011-0659, Micro-inspection 1.

Inspection Locations



1. Enclosure and markings
2. Camera and vibe area
3. Upper logic board
SIM card reader

- 4.
5. Lower logic board
6. Dock flex
7. Display assembly
8. Buttons, ringer switch, and flexes
9. Display flexes

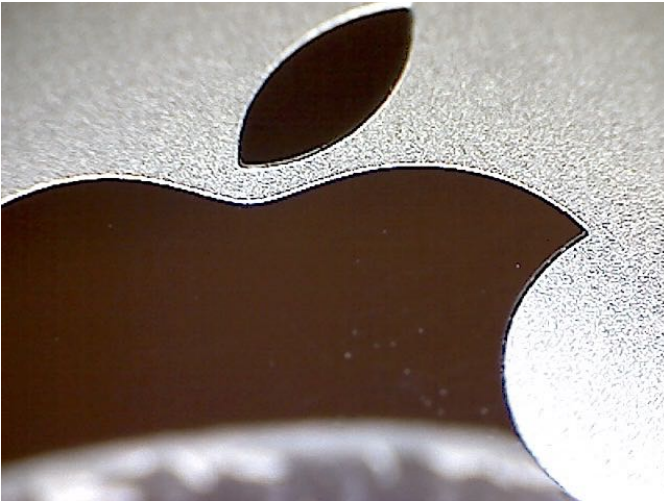
Unauthorized Modification Examples:

Enclosure and Markings

The enclosure should have two lines of text.

Known-good Apple logo

Apple logo should be flush with the enclosure.



Third-party Apple logo

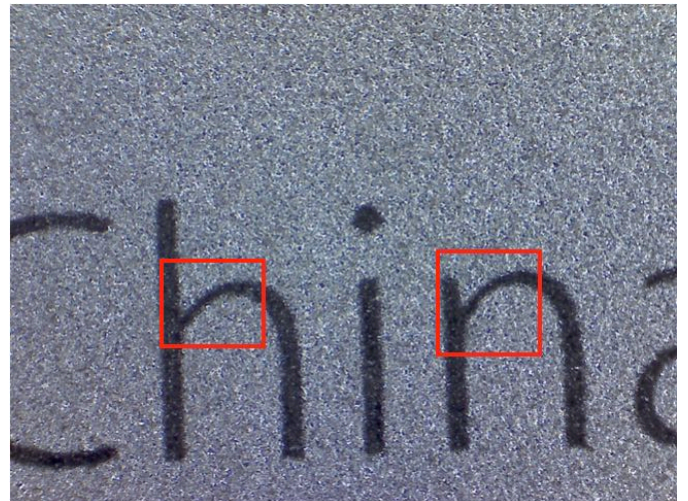


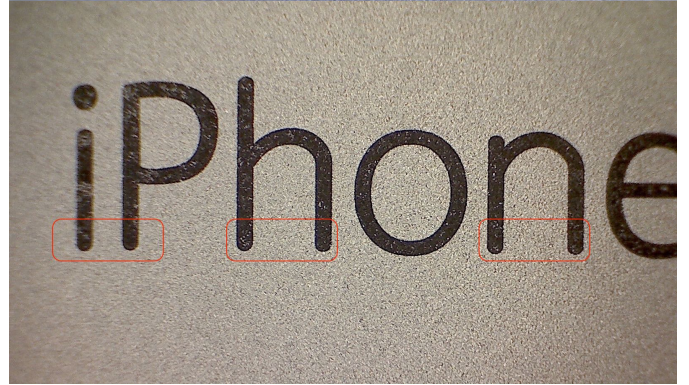
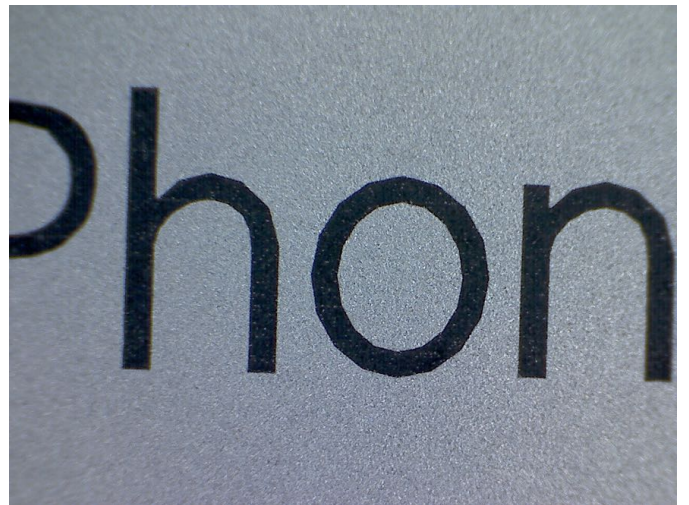
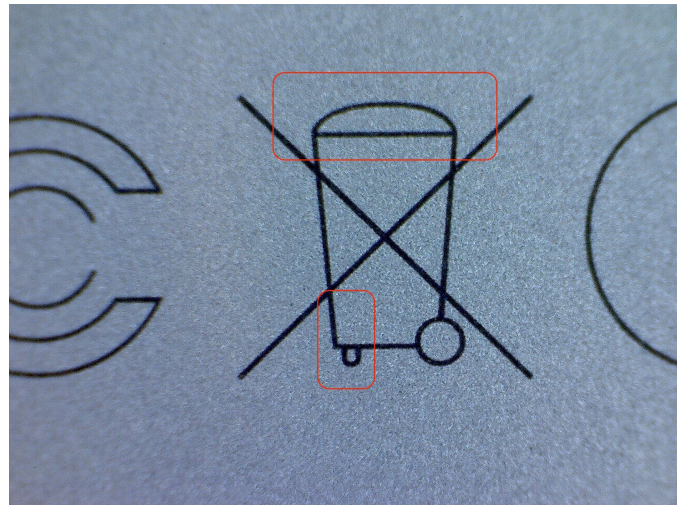
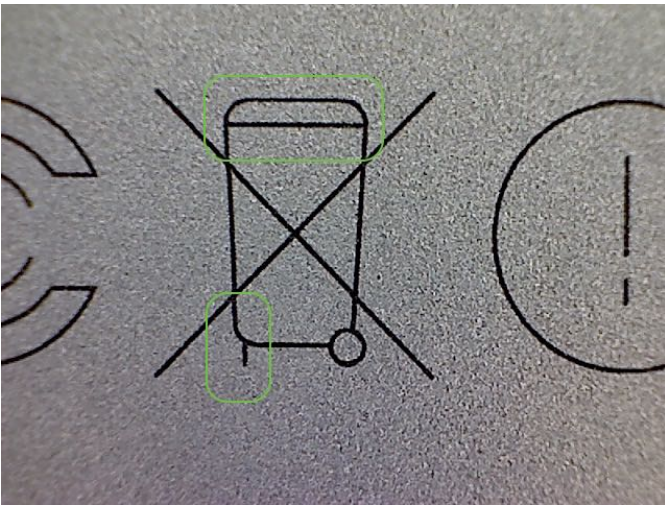
Known-good font

If font discrepancies are found, then continue inspection for other signs of damage or modification.



Third-party font

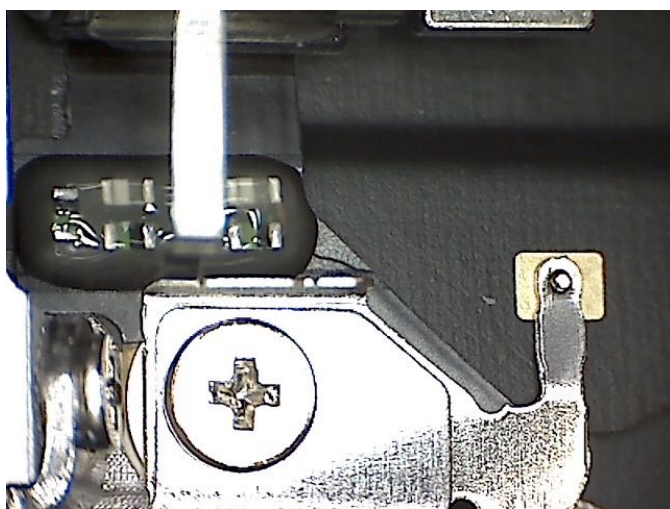




Camera and vibe area



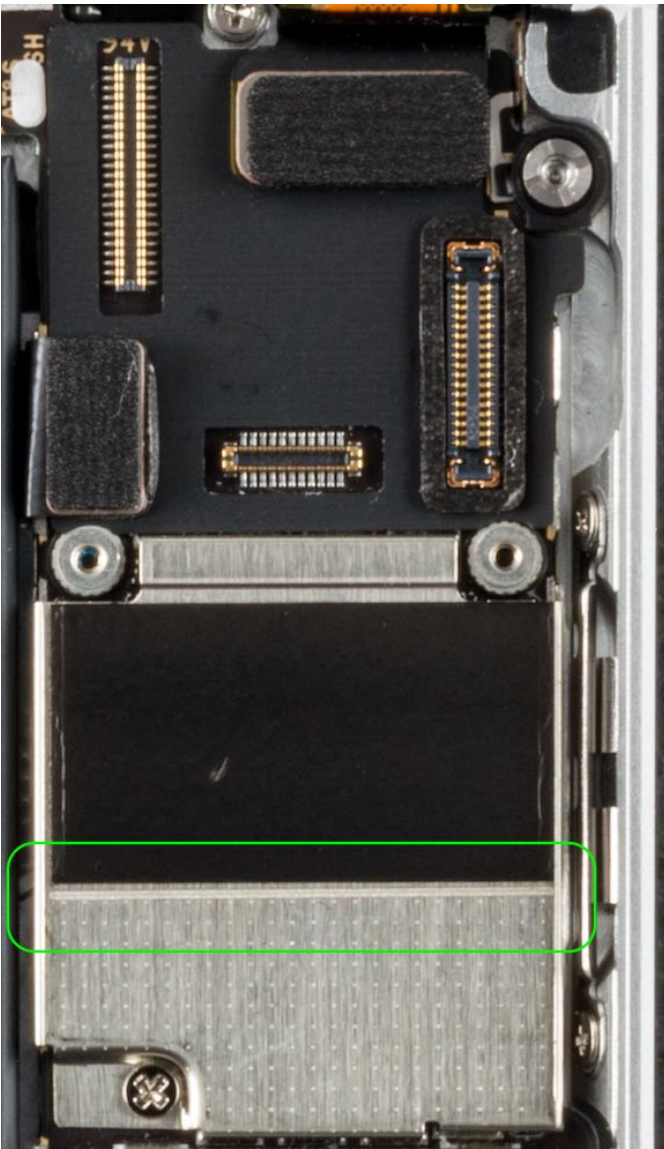
Known-good components



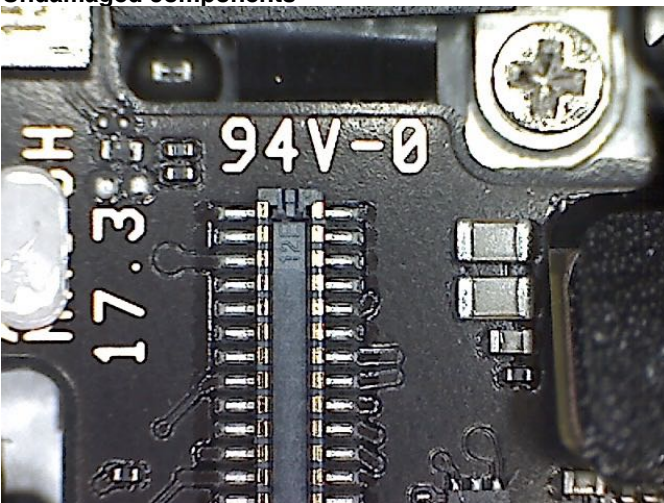
Upper logic board area

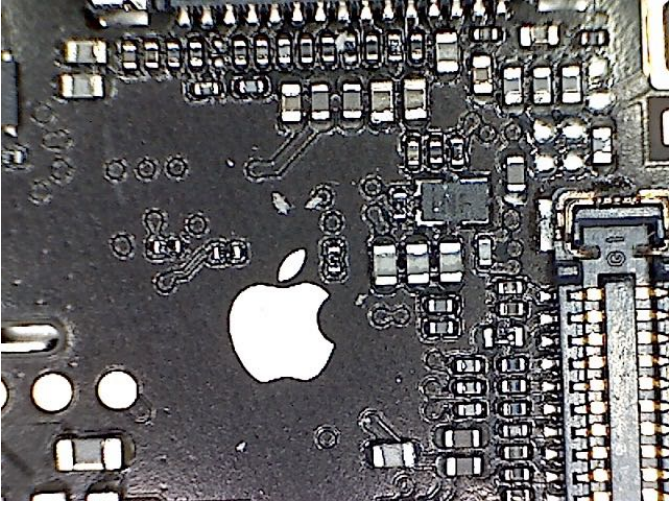
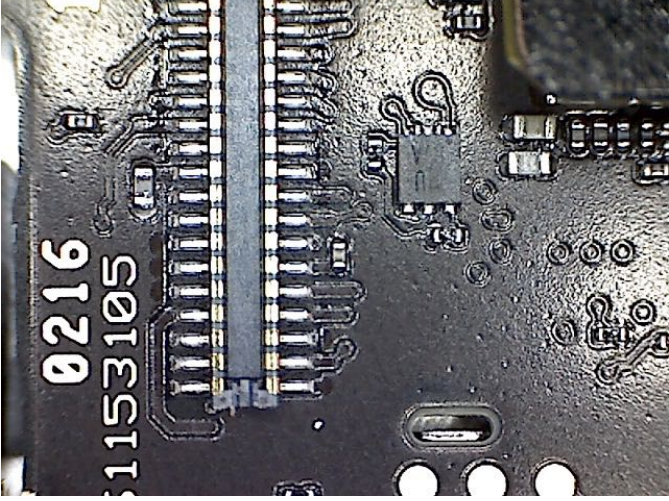
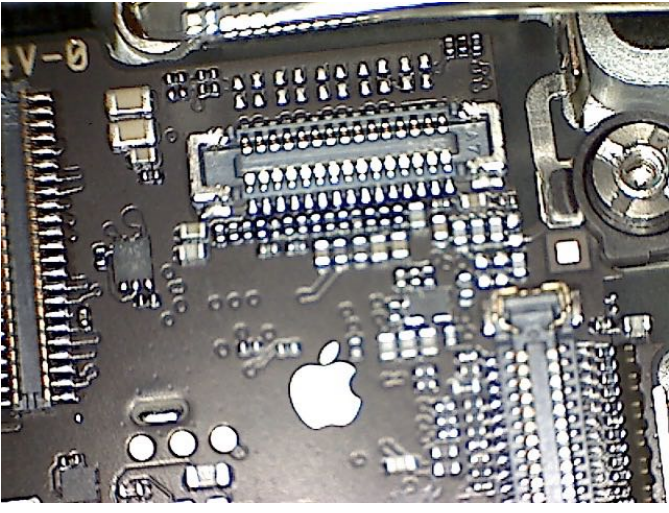
Note: Remove the black tape from the logic board.

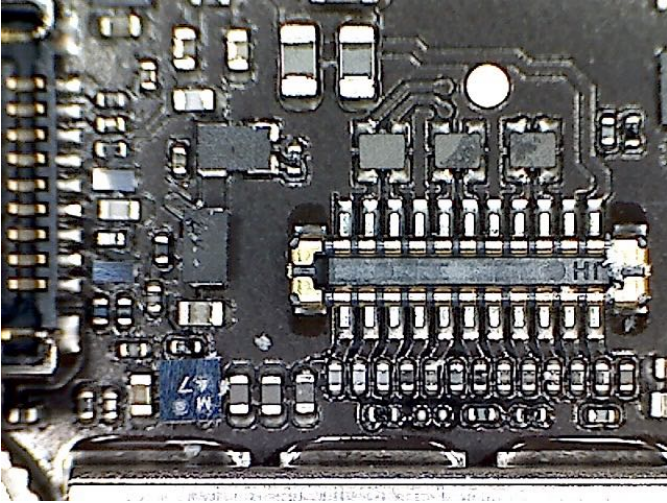
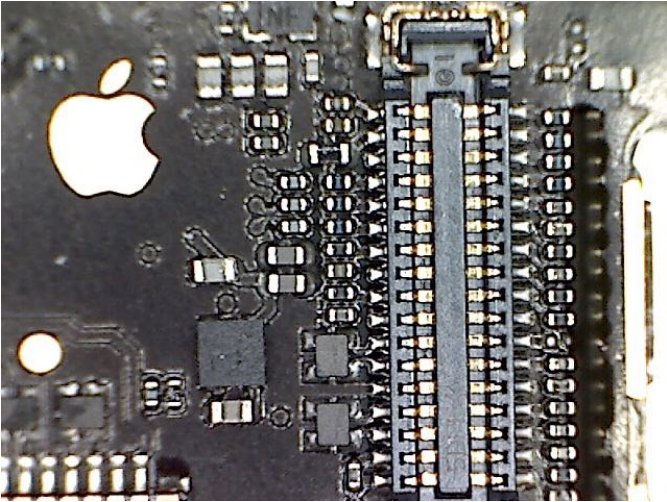
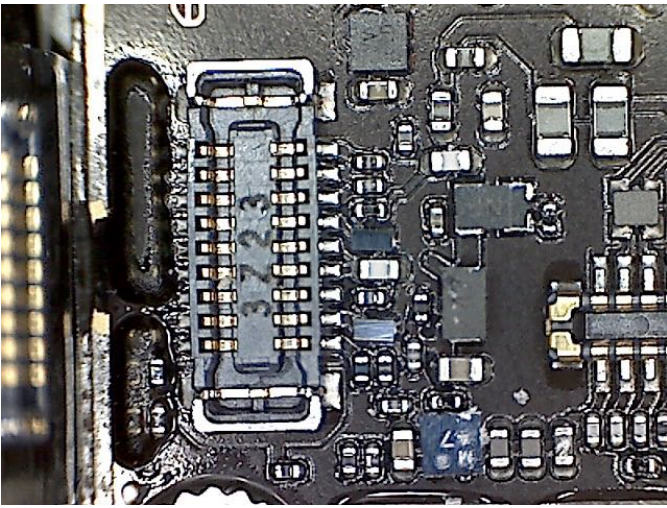
Inspect logic board shielding shape.

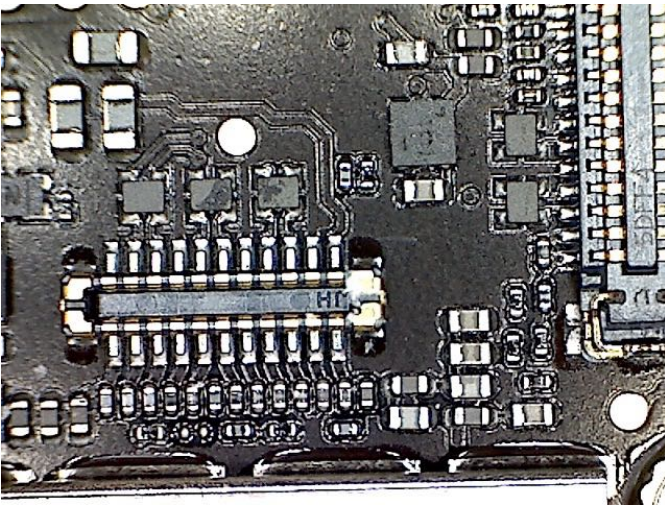


Undamaged components

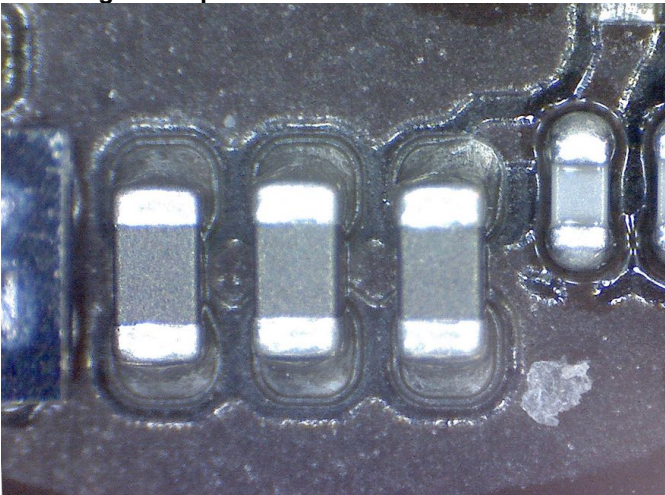




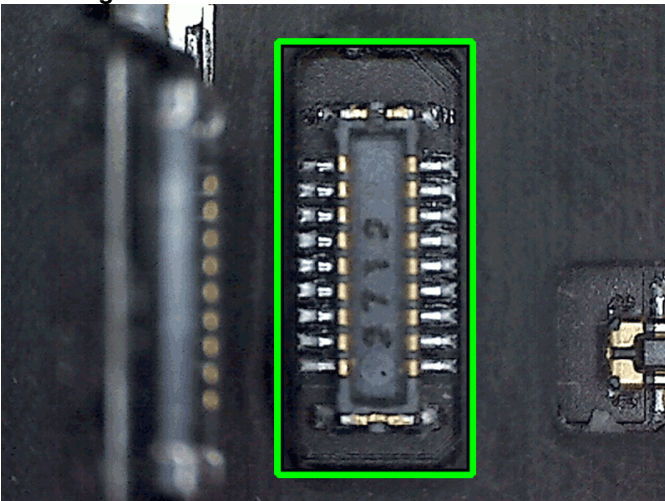




Undamaged components

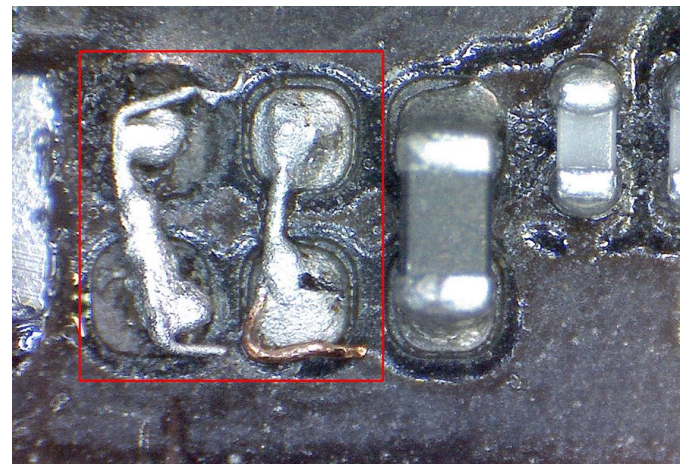


Undamaged flex connector

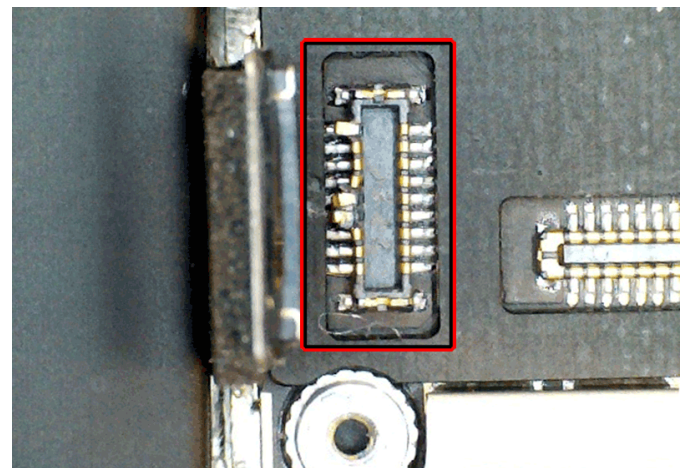


Undamaged connector

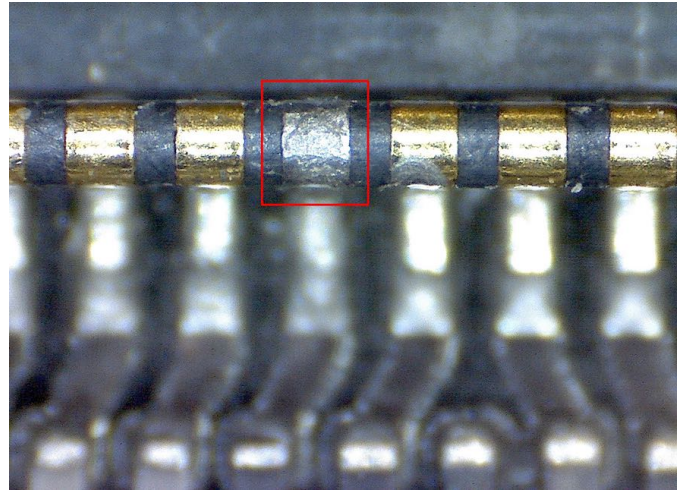
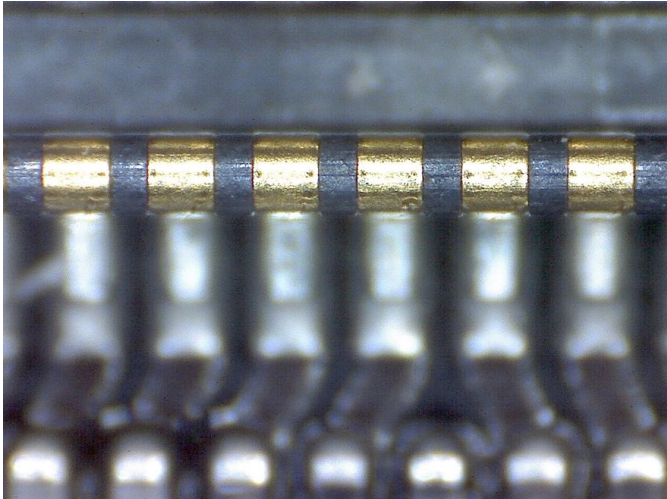
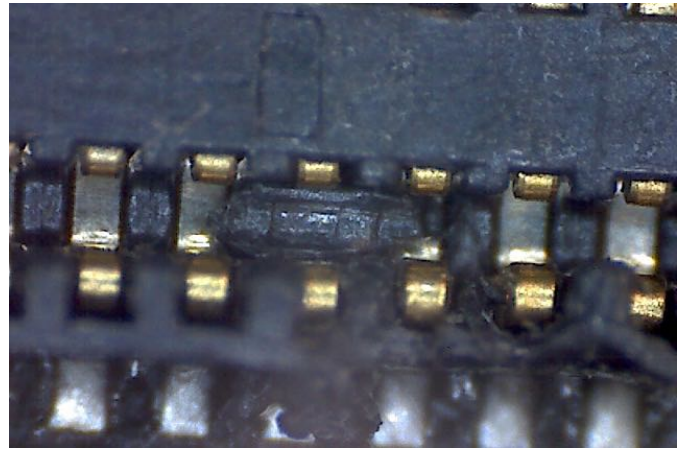
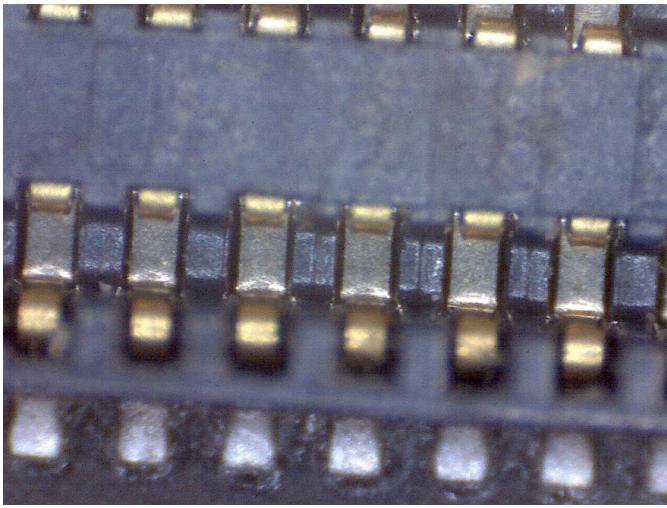
Damaged components



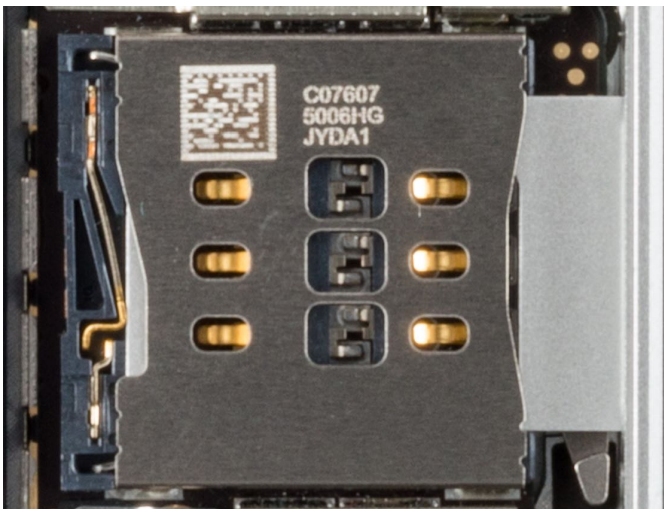
Damaged flex connector (bent and missing pins)



Damaged connector (foreign material)

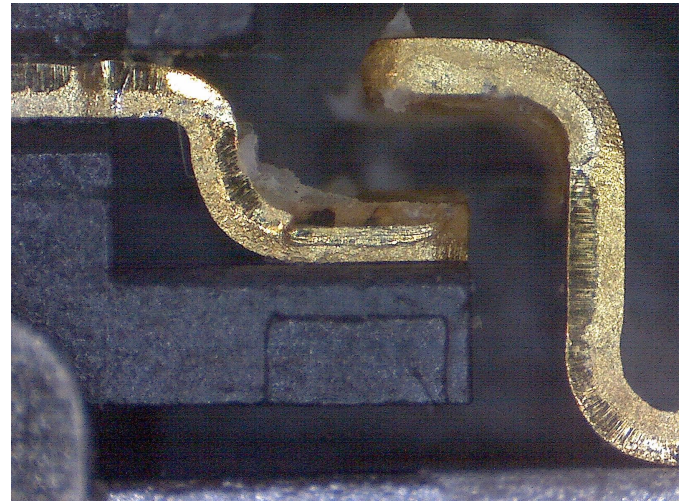
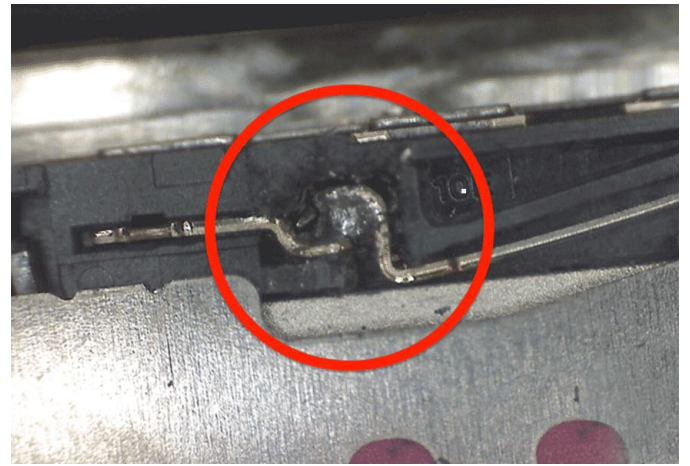
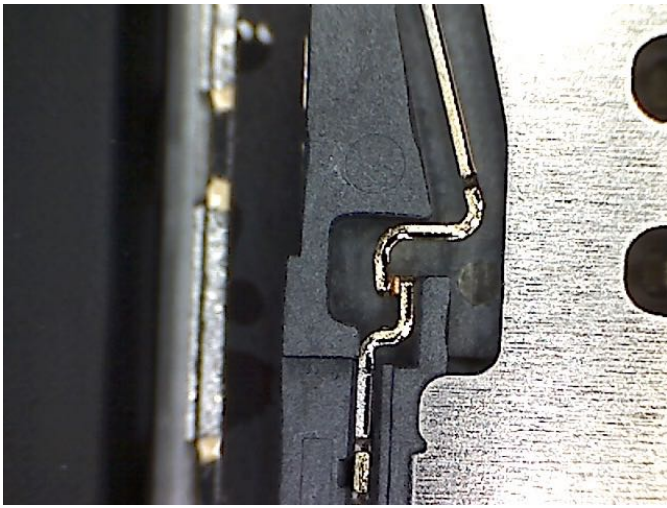


SIM Card Reader

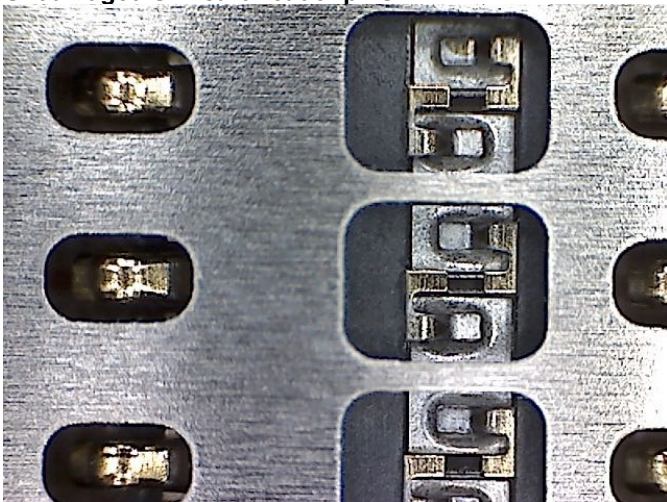


Undamaged component

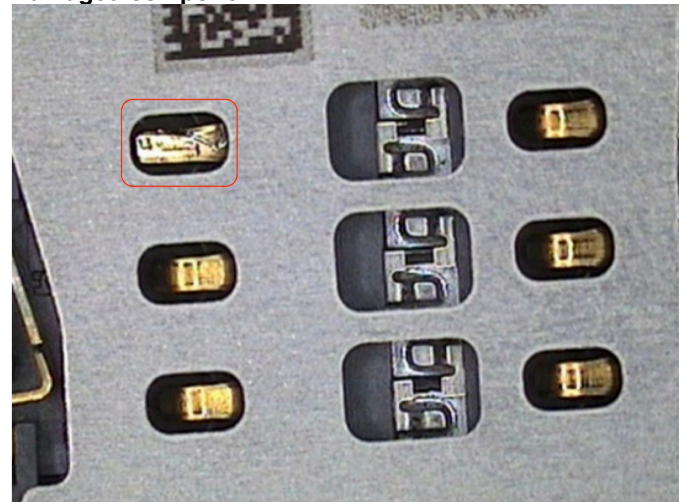
Damaged component (damaged or obstructed components)



Undamaged SIM card reader pins

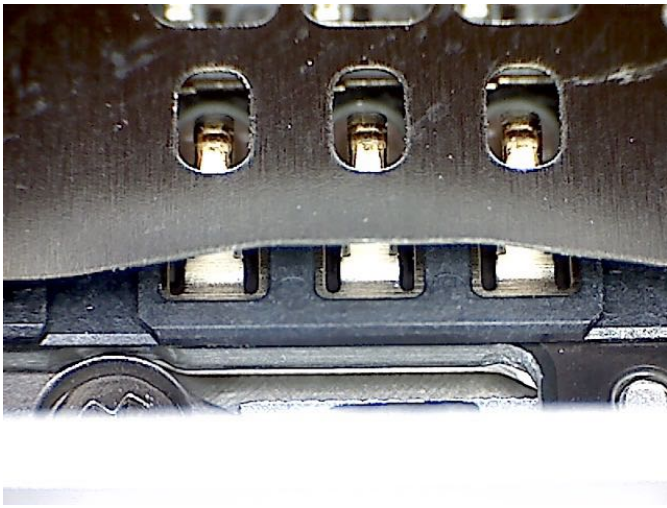


Damaged component



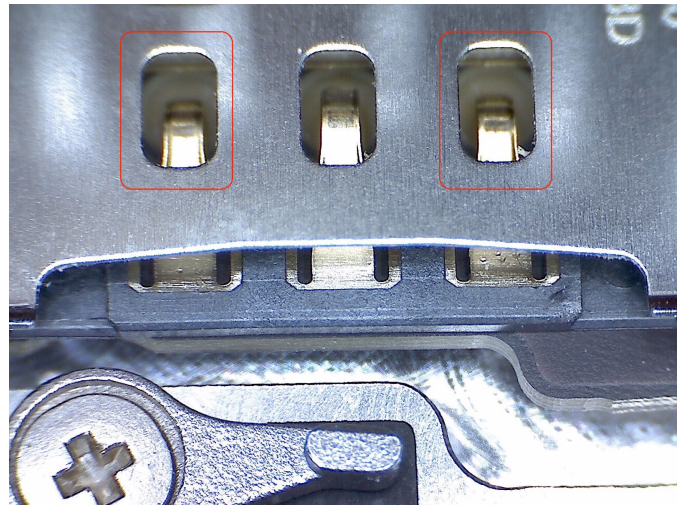
Undamaged SIM card reader pins

Damaged component

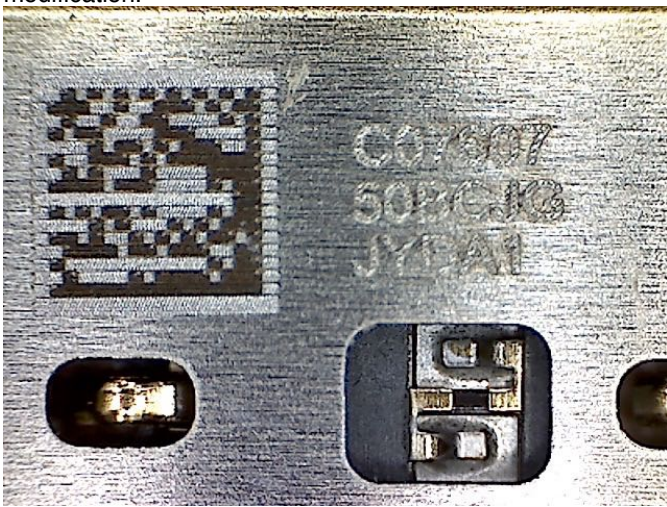


Apple serial number

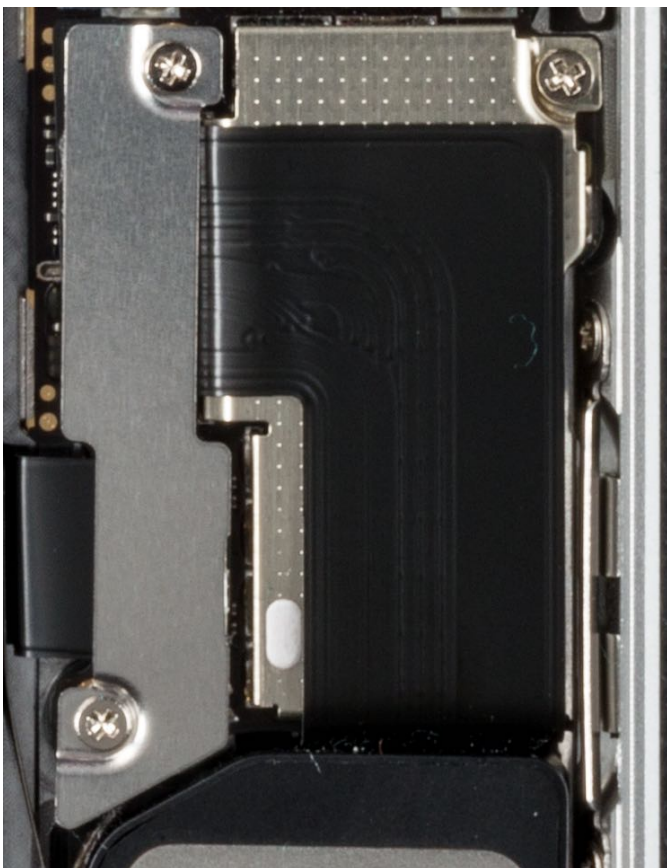
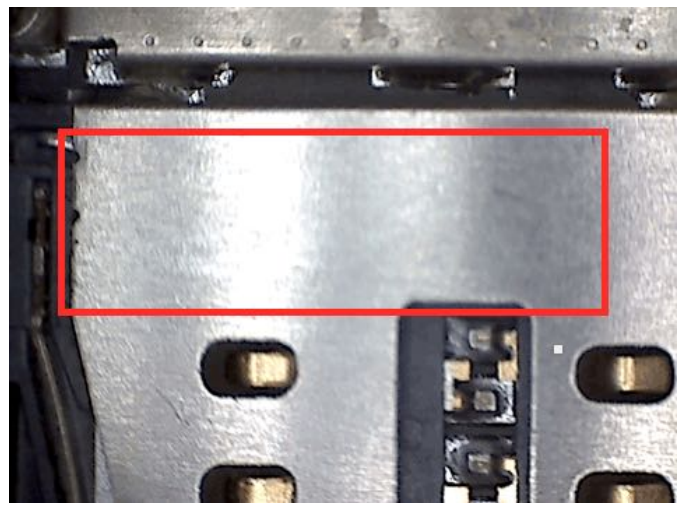
The etched serial number maybe at the top or bottom of the SIM card reader. A missing serial number is a sign of modification.



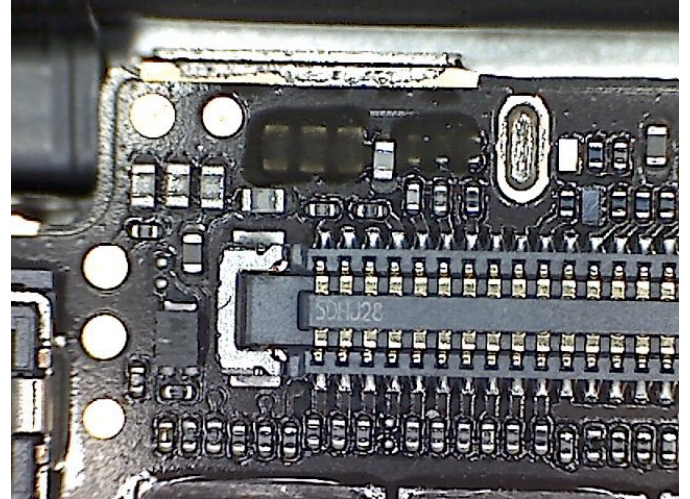
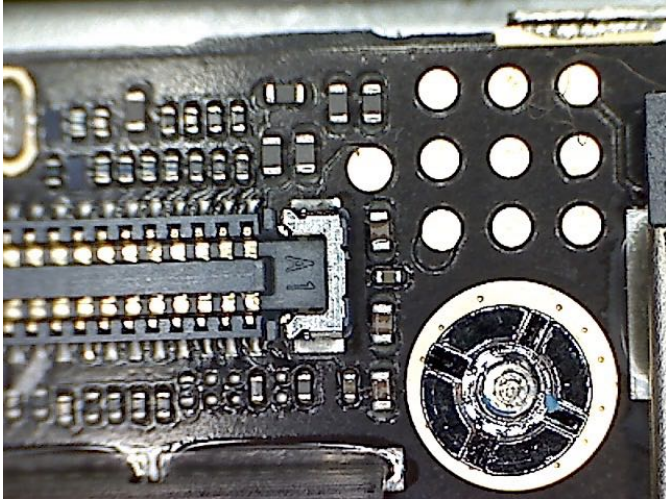
Damaged or modified serial number



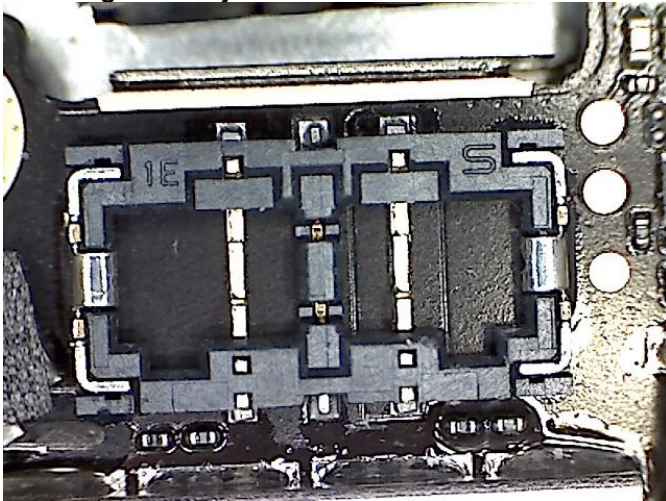
Lower logic board area



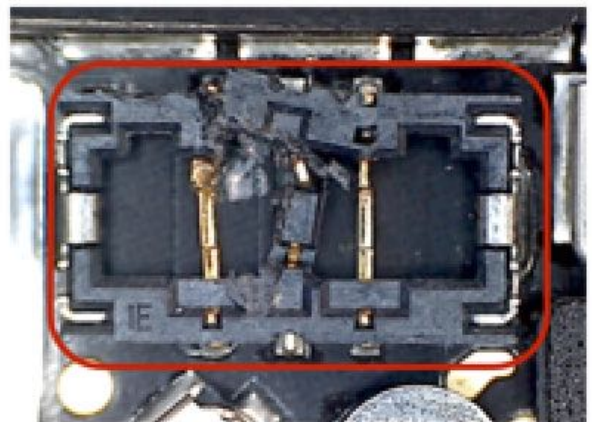
Undamaged components



Undamaged battery connector



Damaged battery connector



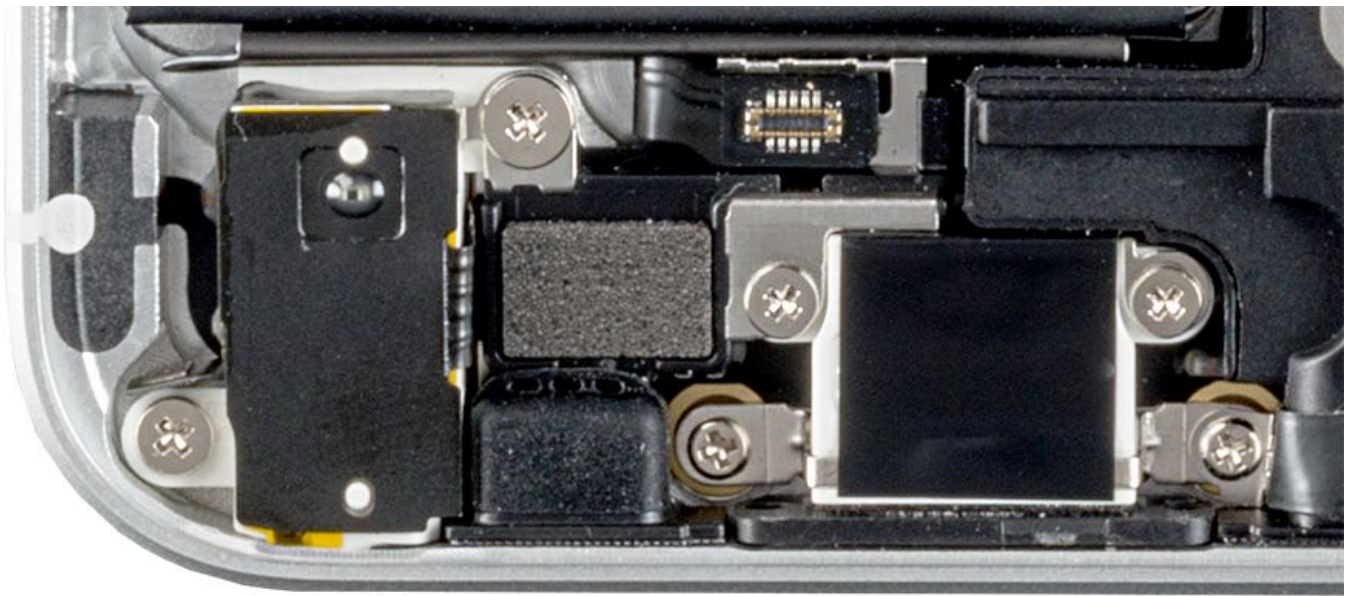
Undamaged battery flex cable



Damaged battery flex cable

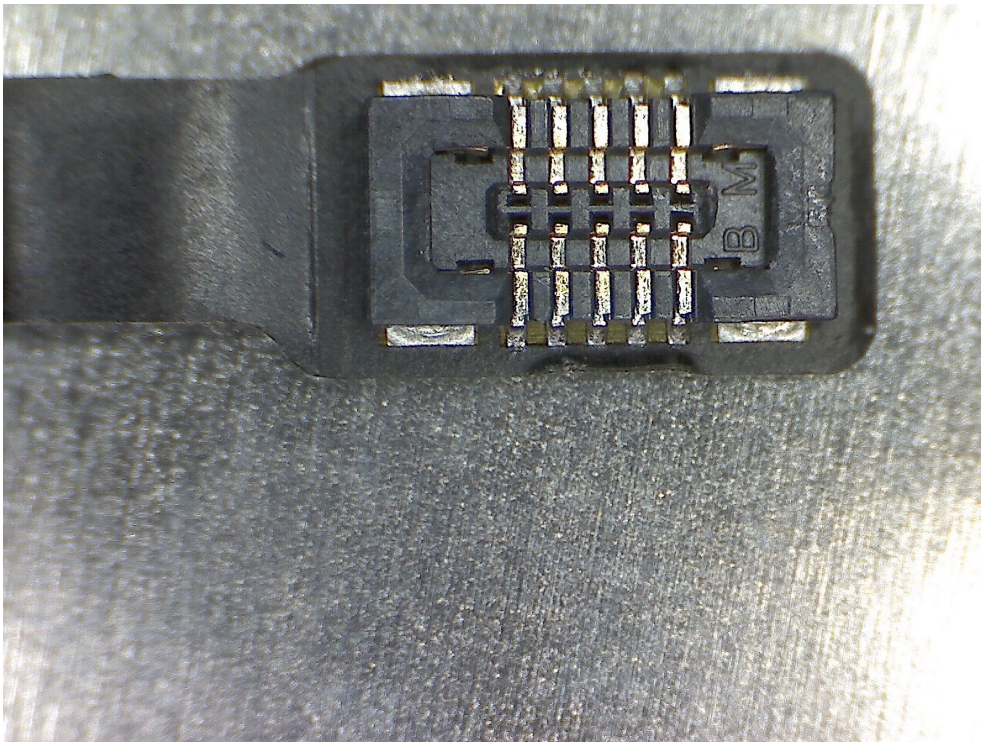


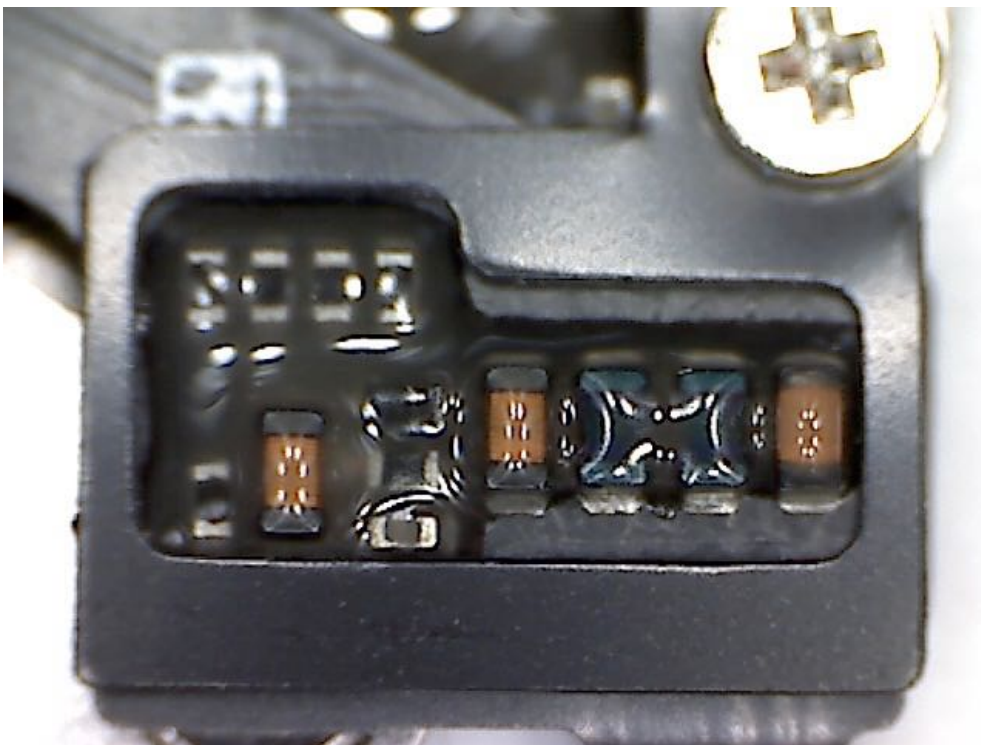
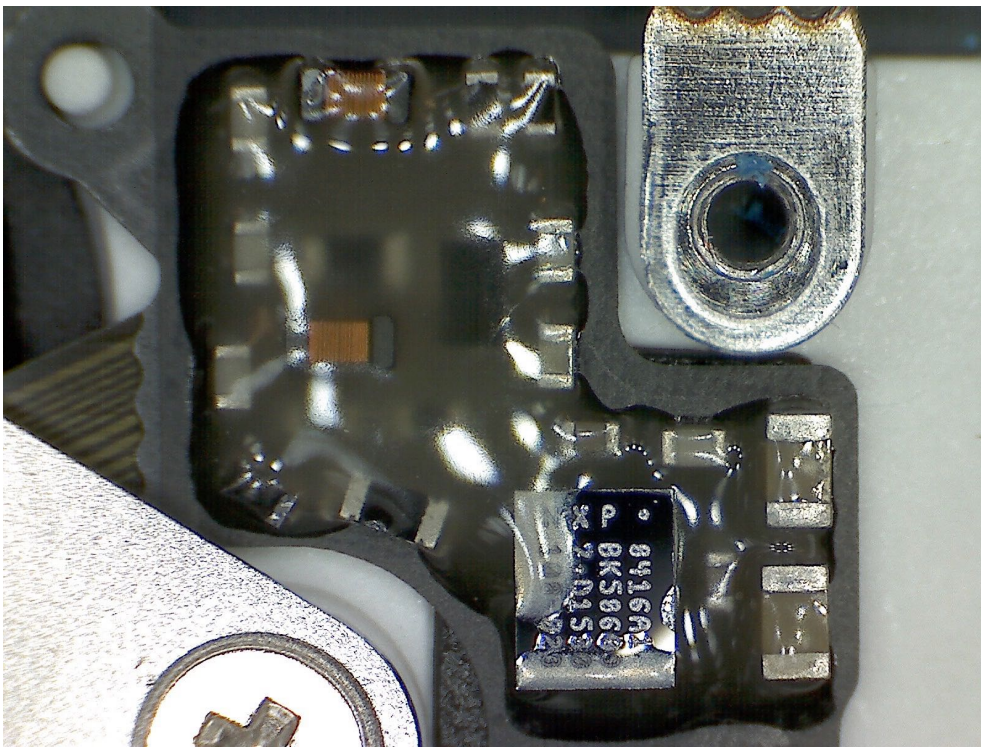
Dock flex



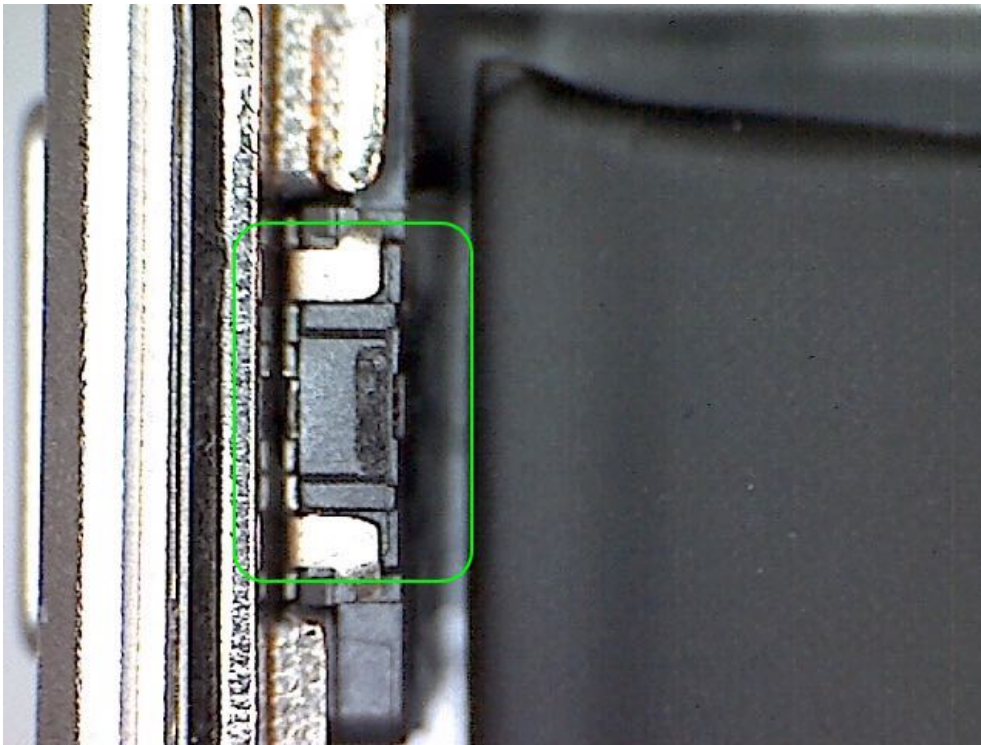
Buttons, ringer switch, and flexes

Undamaged components

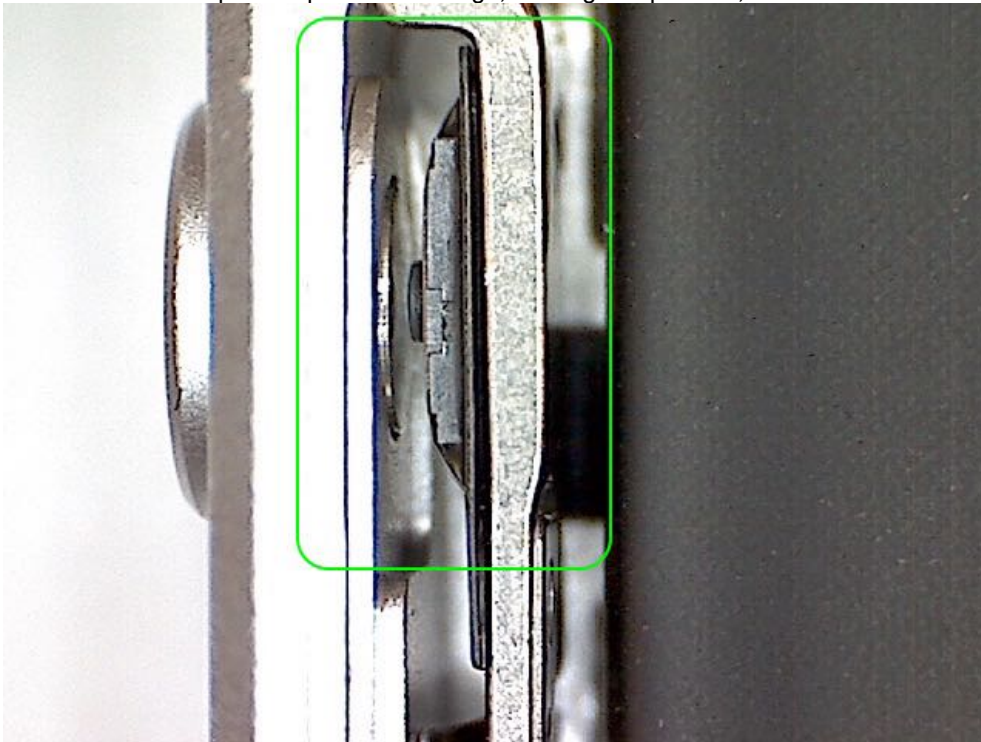




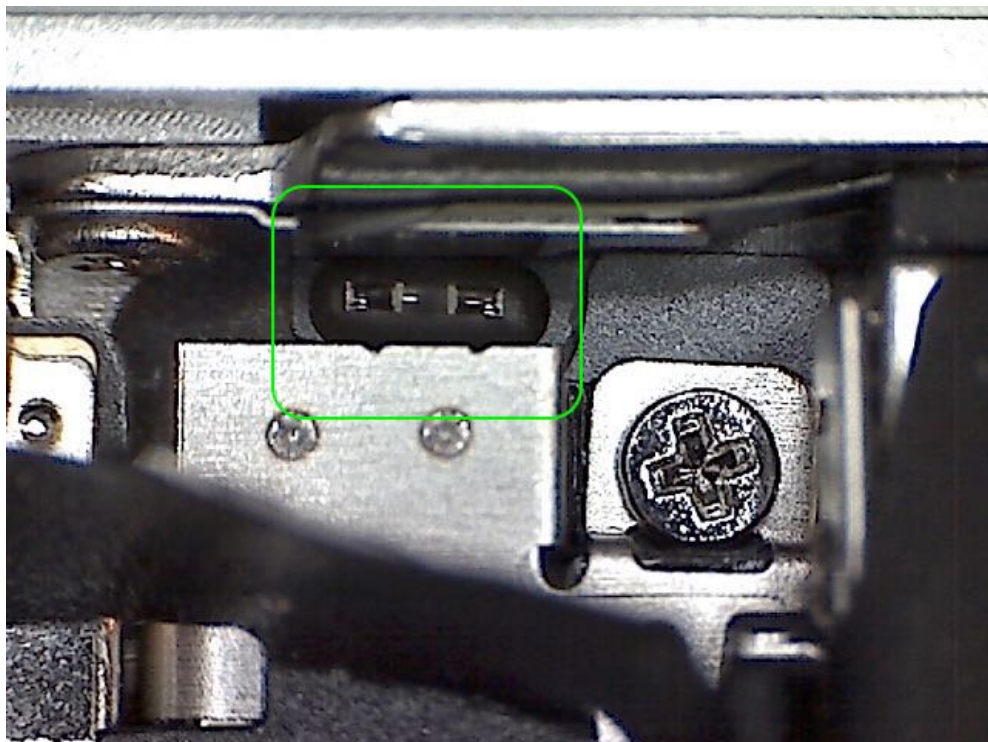
Ringer Switch Inspect for puncture damage, missing components, and obstructions.



Volume Button Inspect for puncture damage, missing components, and obstructions.



Sleep/Wake Button Inspect for signs of intentional damage or missing components.



USB Microscope Camera Setup

The USB Microscope tool (661-7382) is required for the Micro-Inspection Procedure.

Set-Up and Use

IMPORTANT: DO NOT USE THE SUPPLIED INSTALLATION CD.

Note: The live video shown in Photo Booth may be inversed if effect is not applied, or the Photo Booth Camera Flip package was not downloaded and installed.

1. Go to [SD119: Camera Flip Effect Installation Package for USB Microscope Tool](#) and download the PhotoBoothCameraFlip.pkg
2. Open the Photo Booth Camera Flip Installer and follow the on screen instructions.
3. Open the USB Microscope box and unpack the USB Microscope. **Note:** Remove protective lens cap from microscope before use.
4. Plug the USB Microscope into an available USB port on a workstation computer.
5. Open Photo Booth.
6. In Photo Booth, select Camera in the top menu bar.
7. Choose Venus USB2.0 Camera.
8. Click the Effects button.
9. Choose the last page of effects, select Flip.
10. If the Shutter button in the center (below the live video) is not red, click it.
11. When you are ready to take a picture, click the red Shutter button.

USB Microscope Overview

Note: Snapshot Button will not work with Photo Booth. Click the Shutter button in Photo Booth to take a picture.

1. LED Light Control Wheel
2. Snapshot Button
3. Focus Wheel
4. Magnification Ruler



Contactless Payment Reader

The Contactless Payment reader is used to verify the functionality of the Apple Watch and iPhone 6, 6 Plus, 6s, 6s Plus, SE, 7, 7 Plus, 8, 8 Plus, and X Apple Pay hardware only. The reader will not gather any payment data or information. The test will not charge the user's payment card and will not detect an issue with the user's account or bank systems.

Running the Apple Pay Test

1. Connect the Contactless Payment reader to an open USB port on a computer.
2. Hold the Apple Watch or top of the iPhone near the reader. If using an Apple Watch, then double-click the side button to activate Apple Pay.
3. If the user is present, then ask him or her to authorize Apple Pay. **Note:** This will not charge the user's payment card.

Results

- If the user authorizes the test, then the light on the reader will turn green and the reader will beep. This indicates that the hardware is functional.
- If the user does not authorize the test, then the light will stay red but the iPhone will continue to ask for authorization. This indicates that the hardware is functional.

If neither result occurs, then the hardware may not be functional. To continue troubleshooting, refer to articles:

- [IT1150: Apple Watch: Apple Pay Issues](#)
- [IT1144: iPhone 6 and 6 Plus: Apple Pay Issues](#)
- [IT1210: iPhone 6s, 6s Plus, and SE: Apple Pay Issues](#)
- [IT1398: iPhone 7, 7 Plus, 8, 8 Plus, X: Apple Pay Issues](#)

Common Troubleshooting Procedures

When troubleshooting, attempt the common troubleshooting procedures in the order listed in the table below. Click the name of a quick fix procedure for detailed information.

Important:

- These steps may not be effective for all issues. Apply only the steps necessary to isolate and resolve the user's issue.
- Before servicing a device, ensure that the customer has disabled Find My iPhone in Settings. For more information, refer to article [HT201365: Find My iPhone Activation Lock](#).

Procedure	Action
Update to Latest Software	Go to Settings > General > Software Update, if available; or Use the latest version of iTunes (www.apple.com/itunes/download) to check for the latest iOS. Connect the device to the computer, go to iTunes > (Device) > Summary, and click the "Check for Update" button.
Charge Battery	Connect to a known-good power outlet, using a known-good Apple USB Power Adapter and Lightning to USB Cable to charge the battery. Do not charge via a computer port or wireless charging. Note: The device may have entered a deep discharge state that requires 20–30 minutes of charging to turn on. The battery trap should be visible within two minutes on the screen while charging.
Force an App to Close	iPhone 8 and earlier, iPad, and iPod touch: <ol style="list-style-type: none">1. Double-click the Home button to see preview screens of recently used apps.2. Swipe the app's preview screen up and out of the preview. iPhone X: <ol style="list-style-type: none">1. Slide up from the bottom of the screen to see preview screens of recently used apps.2. Tap and hold on a app preview screen until the minus button appears.3. Tap the minus button or swipe the app's preview screen up and out of the preview.

Restart	<p>A restart forces the device to close all open files and turns off all hardware components.</p> <p>For all devices running iOS 11:</p> <ol style="list-style-type: none"> 1. Choose Settings > General > Shut Down. 2. Slide your finger across the slider to turn off the device. 3. To turn the device on, press and hold the Sleep/Wake or Side button until the Apple logo appears. <p>iPhone 8 and earlier, iPad, and iPod touch:</p> <ol style="list-style-type: none"> 1. Press and hold the Sleep/Wake or Side button until a slider appears. 2. Slide your finger across the slider to turn off the device. 3. To turn the device on, press and hold the Sleep/Wake or Side button until the Apple logo appears. <p>iPhone X:</p> <ol style="list-style-type: none"> 1. Press and hold the Volume Down button and the Side button until a slider appears. 2. Slide your finger across the slider to turn off the device. 3. To turn the device on, press and hold the Side button until the Apple logo appears.
Reset	<p>Perform a reset only if unable to do a restart.</p> <p>Press and hold the following two buttons together for at least 10 seconds, until the Apple logo appears.</p> <ul style="list-style-type: none"> • iPhone 6s or earlier, iPad, and iPod touch: Sleep/Wake button and Home button. • iPhone 7: Side button and Volume down button. • iPhone 8 and X: Press and quickly release the Volume Up button. Then press and quickly release the Volume Down button. Then press the Side button for about six seconds, until the screen goes black. Finally, press and hold the Side button until you see the Apple logo.
Erase All Content and Settings *	<p>Erases all user content and settings, including installed apps. From the Home screen, choose Settings > General > Reset > Erase All Content and Settings. If possible, try this before a restore because it is much faster.</p>
Restore *	<p>Erases all software and data and installs a fresh copy of iOS. Connect the device to the computer, go to iTunes > (Device) > Summary, and click the “Restore” button.</p>
Recovery Mode Restore *	<p>Recovery mode loads only the firmware drivers necessary for iTunes to recognize the device. Click the link at left for instructions.</p>

***Caution: This will delete all user data and settings on the device. If saving content is important to the user, a backup should be made before beginning this process.** If restoring user data from either an iCloud or iTunes backup causes an issue to return, there is no reason to restore from the other backup method as it will lead to the same result.

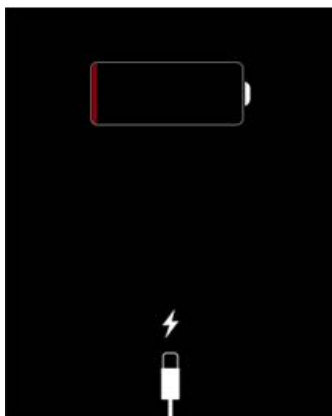
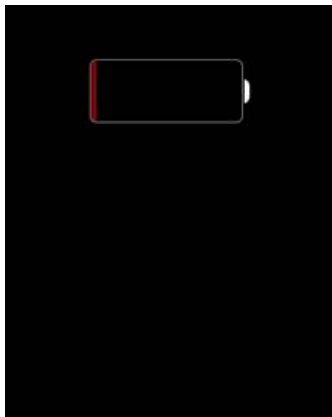
DF Reset and DFU Restore are not necessary to troubleshoot iOS devices. Restore and Recovery Mode Restore take less time to accomplish the same result. If the device will not go into Recovery Mode or will not charge, then follow the troubleshooting steps in the Service Guide.

Charge Battery

The device must have sufficient battery charge to proceed with troubleshooting. A low battery condition can cause many issues.

If the device has any of the following symptoms, it should be connected to an Apple 10W USB Power Adapter or Apple 12W USB Power Adapter to charge for at least 10 minutes:

- Will not turn on
- Black screen
- Shows the “battery trap” image
- Low battery charge



Note: If the device is extremely low on power, the display may be blank for up to two (2) minutes before one of the low-battery images appears. An Apple USB Power Adapter delivers more power than the USB ports of some computers, so the power adapter is the recommended initial charging method for a low battery. Once the device has started up to the iOS, it can be disconnected from the power adapter and connected to a computer.


If troubleshooting or testing will be performed without the device connected to power, check that the device has a sufficient charge before continuing.

Important:

- Before connecting any cable to the dock connector, Lightning connector, or headset jack, check the port connections for debris, contamination, corrosion, liquid, or damage. Clean or remedy these issues before connecting any cables.
- If the device becomes too hot while charging, disconnect and replace the device.
- Only use a known-good Apple USB Power Adapter with an Apple Lightning to USB Cable when charging from a power outlet. While other power adapters may appear to be compatible, their lower power output is not sufficient to charge the device.
- The battery icon in the upper right corner of the screen shows the battery charging status and approximately how much charge is left in the battery. When the device is connected to a power source, a small lightning bolt icon will appear next to the battery icon.



Note: An iPad may take longer to charge while syncing or using the iPad. If the iPad is connected to a source that does not provide enough power to sufficiently charge the device, the notification “Not Charging” appears next to the battery indicator in the status bar (top right corner).

Not Charging 

Refer to the following articles for more information:

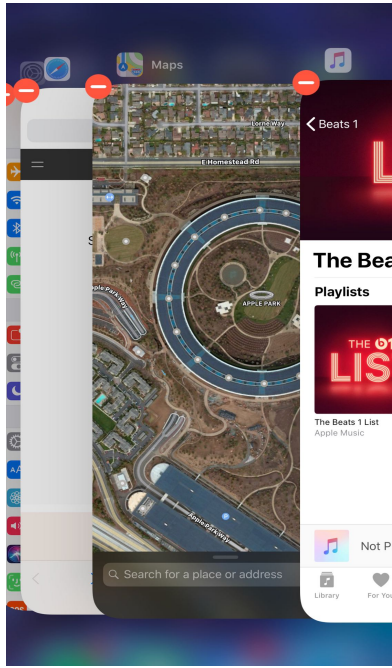
- [HT201569: If your iPhone, iPad, or iPod touch won't charge](#)
- [HT201264: About the battery usage on your iPhone, iPad, and iPod touch](#)
- [www.apple.com/batteries](#)

Force an App to Close

This procedure forces an app to close that is not responding to input or does not perform as expected. This is a recommended first troubleshooting step.

iPhone X:

1. Slide up from the bottom of the screen to see preview screens of recently used apps.
2. Tap and hold on a app preview screen until the minus button appears.
3. Tap the minus button or swipe the app's preview screen up and out of the preview.



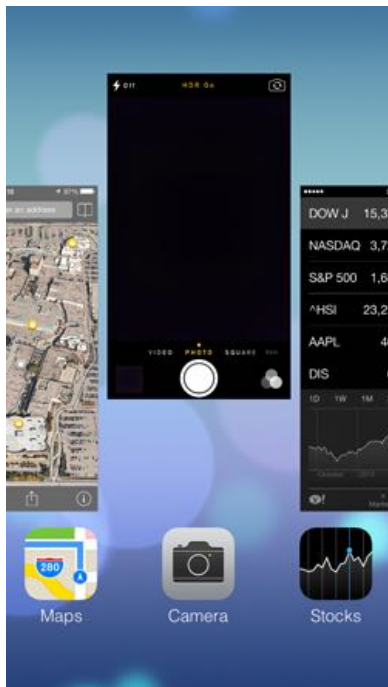
Procedure for iOS 9 and later:

1. Double-click the Home button to see preview screens of recently used apps.
2. Swipe the app's preview screen up and out of the preview.



Procedure for iOS 7 and iOS 8:

1. Double-click the Home button to see preview screens of recently used apps.
2. Swipe the app's preview screen up and out of the preview.



Refer to the following articles for more information:

- [HT201330: How to force an app to close on your iPhone, iPad, or iPod touch](#)
- [HT202070: Switch apps on your iPhone, iPad, or iPod touch](#)
- [HT201398: If an app you installed unexpectedly quits, stops responding, or won't open](#)

Restart

A restart properly saves user data, closes down all open applications and powers off all hardware components, then restarts the device.

A restart can quickly resolve a wide range of issues, including:

- App(s) unexpectedly quit.
- Battery life is shorter than expected.
- Hardware not performing as expected.
- Interface or apps are slow to respond.
- iTunes does not recognize or sync with the device.

Procedure:

For all devices running iOS 11:

1. Choose Settings > General > Shut Down.
2. Slide your finger across the slider to turn off the device.
3. To turn the device on, press and hold the Sleep/Wake or Side button until the Apple logo appears.

iPhone 8 and earlier, iPad, and iPod touch:

1. Press and hold the Sleep/Wake or Side button until a slider appears.
2. Slide your finger across the slider to turn off the device.
3. To turn the device on, press and hold the Sleep/Wake or Side button until the Apple logo appears.

iPhone X:

1. Press and hold the Volume Down button and the side button until a slider appears.
2. Slide your finger across the slider to turn off the device.
3. To turn the device on, press and hold the side button until the Apple logo appears.

Note: If you cannot restart the device because it is unresponsive, a [Reset](#) is the next appropriate troubleshooting step.

Reset

If the device is unresponsive and restart does not work, try to reset it.

IMPORTANT: Perform a reset ONLY if unable to do a restart.

Key Points:

- Reset only when you cannot restart the device normally.
- A reset removes all power for a fraction of a second to power off the device.
- A reset does not close open files or save data before the device powers off.
- **CAUTION: A reset can potentially cause file or operating system damage, requiring a restore.**

Procedure:

1. Press and hold the following two buttons together for at least 10 seconds, until the Apple logo appears.
 - iPhone 6s or earlier, iPad, and iPod touch: Sleep/Wake button and Home button.
 - iPhone 7: Side button and Volume down button.
 - iPhone 8 and X: Press and quickly release the Volume Up button. Then press and quickly release the Volume Down button. Then press the Side button for about six seconds, until the screen goes black. Finally, press and hold the Side button until you see the Apple logo.

Erase All Content and Settings

Erase All Content and Settings is a quick way to get a device back to factory settings. It will delete all user content and settings, but does not reinstall iOS like a restore does. Erase All Content and Settings can resolve software issues more quickly than a time-consuming restore.

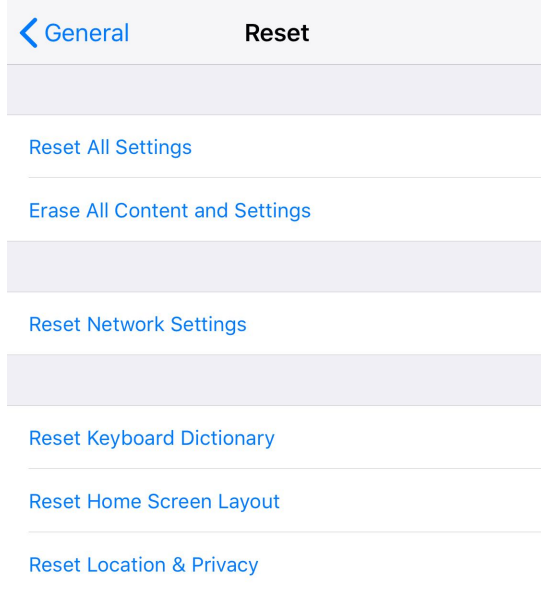


Caution: This will delete all user data and settings on the device.

Important: Before servicing a device, ensure that the customer has disabled Find My iPhone in Settings. For more information, refer to article [HT201365: Find My iPhone Activation Lock](#).

Procedure:

1. From the Home screen, choose Settings > General > Reset > Erase All Content and Settings.



Also see article [HT201274: How to erase your iPhone, iPad, or iPod touch](#).

If Erase All Content and Settings does not resolve an issue, proceed with a [Restore](#).

Restore

A restore completely erases the device and reinstalls a fresh copy of iOS.



Caution: This will delete all user data and settings on the device.

IMPORTANT: Before servicing a device, ensure that the customer has disabled Find My iPhone in Settings. For more information, refer to article [HT201365: Find My iPhone Activation Lock](#).

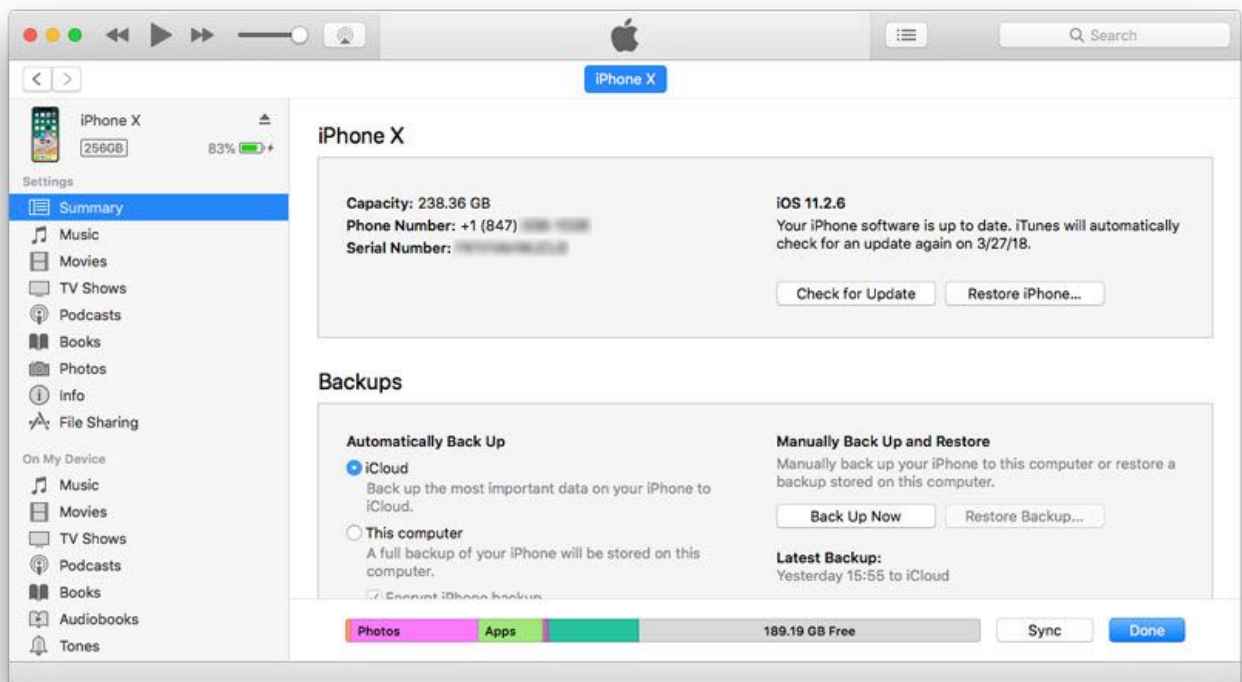
Key Points:

- A restore erases all user content, settings, and iOS files, and then reinstalls only iOS.
- A restore is time-consuming, especially if you have to download the restore package.
- If iTunes displays an alert with an error code, refer to articles:
 - [HT204770: Get help with iOS update and restore errors](#)
 - [HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod](#)
- When the restore is complete, test the device before restoring a backup or syncing content. Refer to articles:
 - [HT204136: About backups for iOS devices](#)
 - [HT203977: How to back up your iPhone, iPad, and iPod touch](#)

Note: Do not set up as a new device, as this can erase previous backups. Copy or rename the backup folder before proceeding. Refer to article [HT201252: Restore your iPhone, iPad, or iPod to factory settings](#).

Procedure:

1. Connect the device to a computer running the latest version of iTunes.
2. In the left column under Devices, click on the device name, then go to the Summary panel and click the Restore button.



Recovery Mode Restore

If iTunes cannot detect the device or a specific restore error appears, check the cable connections. If the issue persists, consider forcing the device into recovery mode.



Caution: This will delete all user data and settings on the device.

If you cannot restore a device, even when using recovery mode, service or replacement may be the appropriate option.

Note: If the device is connected to iTunes, updating the software may resolve an issue without erasing settings and content. If updating the software does not work, it may be necessary to restore the device, which will erase all settings and content.

Important: Before servicing a device, ensure that the customer has disabled Find My iPhone in Settings. For more information, refer to article [HT201365: Find My iPhone Activation Lock](#).

Key Points

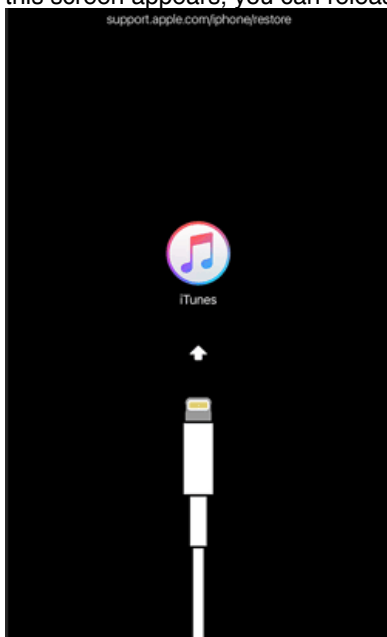
- Recovery mode loads only the firmware drivers necessary for iTunes to recognize the device.
- If iTunes displays an alert with an error code, then refer to the following articles:
 - [HT204770: Get help with iOS update and restore errors](#)
 - [HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod](#)

Note: In certain situations, a device will automatically go into recovery mode after an update or restore issue. If the device is already in recovery mode, then attempt to restore the device using iTunes.

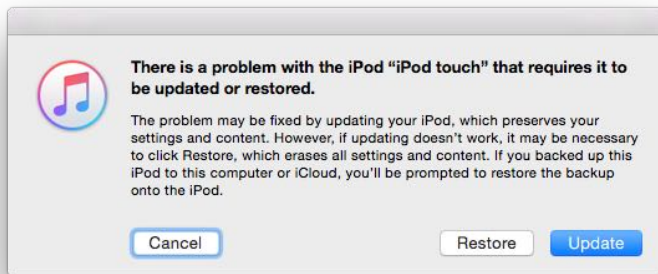
Procedure:

Use the following steps to place a device into recovery mode. If the device is already in recovery mode, connect the device to a computer and start at step 4.

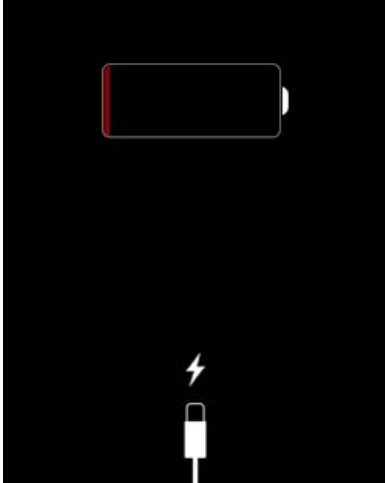
1. Connect the device to a computer and open iTunes.
2. While your device is connected, force it to restart.
 - **iPhone X, iPhone 8, or iPhone 8 Plus:** Press and quickly release the Volume Up button. Press and quickly release the Volume Down button. Then, press and hold the Side button until the recovery-mode screen appears.
 - **iPhone 7 or iPhone 7 Plus:** Press and hold the Side and Volume Down buttons at the same time. Keep holding the buttons until the recovery-mode screen appears.
 - **iPhone 6s and earlier, iPad, or iPod touch:** Press and hold both the Home and the Top (or Side) buttons at the same time. Keep holding the buttons until the recovery-mode screen appears.
3. Do not release the buttons when the Apple logo appears. Keep holding until the recovery mode screen appears. When this screen appears, you can release the button.



4. Use iTunes to update or restore the device. Update may preserve the data on the device. All data will be lost if restored.



If you see the “battery trap” image (below), let the device charge for at least 10 minutes to ensure that the battery has some charge, then repeat step 2.



If you do not see the “Connect to iTunes” screen, try these steps again. If you see the “Connect to iTunes” screen but the device does not appear in iTunes, refer to article [HT204095: If iTunes doesn't recognize your iPhone, iPad, or iPod](#).

If you decide not to do a restore, you may be able to exit recovery mode by resetting the device.

Accessory Does Not Function

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">“This accessory is not made to work with iPhone” message, when a “Made for iPhone” accessory is connected or when nothing is connected.	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">Verify the accessory’s package says “Made for iPhone”, and not “Made for iPod” or “Made for iPad.” Refer to article HT201619: About iPhone, iPad, and iPod accessories.Verify device is securely connected to accessory; not loose, slanted, or making partial connection.Try the Lightning connector in both orientations.Refer to article HT203284: If you need help with iPhone, iPad, or iPod touch accessories.Restart the device. If unable to restart, try to reset the device.On the device, go to Settings > General > Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.	No	Go to step 2.	`\${nodeText.noSymptomCode}`	
	Also refer to HT204695: Handling a mixed-failure repair if appropriate.				
2.	Is the device in warranty and eligible for warranty service?				
	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	Is the device eligible for out-of-warranty service?	No	Return device to user. Due to damage, the device is no longer eligible for support.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
3.	<p>Check that the Lightning connector and audio jack are not obstructed with lint or debris. Attempt to clean any debris in accordance with TP320: iPhone, iPad, iPod: Cleaning Procedures.</p> <p>Are you able to clean the connector?</p>	Yes	Go to step 4.	\${nodeText.yesSymptomCode}	
		No	Out-of-warranty replacement due to obstruction.	B91	IPHONE
4.	<p>Check the following support articles to verify that the user's accessory is compatible with the user's device model.</p> <ul style="list-style-type: none"> TP869: iPhone 5, 5c, 5s, SE: Accessories HT201619: About iPhone, iPad, and iPod accessories <p>Is the user's accessory compatible with the user's device?</p>	Yes	Go to step 5.	\${nodeText.yesSymptomCode}	
		No	Issue resolved. Advise user to purchase the correct accessory.	\${nodeText.noSymptomCode}	
5.	<p>Substitute a known-good similar accessory, if available, and connect it to the user's device.</p> <p>Is the issue resolved?</p>	Yes	<p>Replace Apple iPhone accessory. Covered if under warranty. Check for out-of-warranty repair options.</p> <p>If user has third-party accessory, refer to manufacturer for support.</p>	B09	IPHONE ACCESSORY
		No	Go to step 6.	\${nodeText.noSymptomCode}	
6.	<p>Go to Settings > General > Reset > Erase All Content and Settings.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Substitute a known-good similar accessory, if available, and connect it to the user's device.</p> <p>Is the issue resolved?</p>	Yes	Issue resolved.	\${nodeText.yesSymptomCode}	
		No	Go to step 7.	\${nodeText.noSymptomCode}	

	Check	Result	Action	Code	Commodity
7.	<p>Follow steps listed in article HT201252: Use iTunes on your Mac or PC to restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did restore complete?</p>	Yes	Go to step 9.	\${nodeText.yesSymptomCode}	
		No	Go to step 8.	\${nodeText.noSymptomCode}	
8.	<p>Perform steps listed in articles HT201210: Resolve iOS update and restore errors in iTunes and HT204770: Get help with iOS update and restore errors to attempt to restore the device.</p> <p>Did restore complete?</p>	Yes	Go to step 9.	\${nodeText.yesSymptomCode}	
		No	Replace the whole unit. Covered if under warranty. Check for out-of-warranty repair options.	B0J	IPHONE
9.	<p>Retest accessory functionality.</p> <p>Is the issue resolved?</p>	Yes	Issue resolved by restoring iOS.	\${nodeText.yesSymptomCode}	
		No	Replace the whole unit. Covered if under warranty. Check for out-of-warranty repair options.	B09	IPHONE

TV/Video Out Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">Unable to display device content on TVUnable to display device content on projectorUnable to mirror content <p>When using a Lightning to video out adapter, such as:</p> <ul style="list-style-type: none">Apple Lightning to Digital AV AdapterApple Lightning to VGA Adapter	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">Refer to HT202044: About Apple Digital AV Adapters for iPhone, iPad, and iPod touch to verify that the user's device and video out adapter accessory are compatible and supported.On the device, go to Settings > General > Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.Try the Lightning connector in both orientations.Verify cables are plugged into the appropriate input jacks and correct input is selected on TV or projector.Restart device. If unable to restart, try to reset device.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	<p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Also refer to HT204695: Handling a mixed-failure repair if appropriate.</p> <p>Is the device in warranty and eligible for warranty service?</p>	No	Go to step 2.	`\${nodeText.noSymptomCode}`	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	<p>Is the device eligible for out-of-warranty service?</p>	No	Return device to user. Due to damage, the device is no longer eligible for support.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
3.	<p>Check that Lightning connector is not obstructed with lint or debris. Attempt to clean any debris in accordance with TP320: iPhone, iPad, iPod: Cleaning Procedures.</p> <p>Are you able to clean the connector?</p>	Yes	Go to step 4.	`\${nodeText.yesSymptomCode}`	
		No	Out-of-warranty replacement due to obstruction.	B91	IPHONE
4.	<p>Connect user's device to the TV or projector with user's adapter and cable.</p> <p>Test for adapter functionality.</p> <p>Does the adapter function properly?</p>	Yes	Issue resolved by cleaning device.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 5.	`\${nodeText.noSymptomCode}`	
5.	<p>Substitute a known-good similar adapter and cable, if available, and connect it to the user's device.</p> <p>Test for adapter functionality.</p> <p>Does the adapter function properly?</p>	Yes	<p>Replace Apple video adapter. Covered if under warranty. Check for out-of-warranty repair options.</p> <p>If user has a third-party video adapter, refer to manufacturer for support.</p>	B09	IPHONE ACCESSORY
		No	Go to step 6.	`\${nodeText.noSymptomCode}`	
6.	<p>Follow the steps listed in article HT201252: Use iTunes on your Mac or PC to restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did restore complete?</p>	Yes	Go to step 8.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 7.	`\${nodeText.noSymptomCode}`	
7.	<p>Perform the steps listed in articles HT201210: Resolve iOS update and restore errors in iTunes and HT204770: Get help with iOS update and restore errors to attempt to restore the device.</p> <p>Did restore complete?</p>	Yes	Go to step 8.	`\${nodeText.yesSymptomCode}`	
		No	<p>Replace the whole unit. Covered if under warranty. Check for out-of-warranty repair options.</p>	B0J	IPHONE

	Check	Result	Action	Code	Commodity
8.	Substitute a known-good similar adapter and cable, if available, and connect it to the user's device. Test for adapter functionality. Does the adapter function properly?	Yes	Go to step 9.	\${nodeText.yesSymptomCode}	
		No	Replace the whole unit. Covered if under warranty. Check for out-of-warranty repair options.	B09	IPHONE
9.	Connect user's device to the TV or projector with user's adapter and cable. Test for adapter functionality. Does the adapter function properly?	Yes	Issue resolved by restoring iOS.	\${nodeText.yesSymptomCode}	
		No	Replace Apple video adapter. Covered if under warranty. Check for out-of-warranty repair options. If user has third-party video adapter, refer to manufacturer for support.	B09	IPHONE ACCESSORY

Apple Pay Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">• User is not able to set up Apple Pay on device.• User's device is unable to make a contactless payment using Apple Pay.• User's device is unable to make an in-app payment using Apple Pay.• User's device Apple Pay functionality has ceased to function. <p>Note: If user's issue is specific to Home button not responding when pressed, please go back and select “Home Button Issues” from the GSX troubleshooting menu. If user's issue is specific to Touch ID functionality, please go back and select “Touch ID Issues” from the GSX troubleshooting menu. This procedure is intended for Apple Pay issues only.</p>	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <p>Note: If user's issue is specific to Home button not responding when pressed, please go back and select “Home Button Issues” from the troubleshooting menu. If user's issue is specific to Touch ID functionality, please go back and select “Touch ID Issues” from the troubleshooting menu. This procedure is intended for Apple Pay issues only.</p> <ol style="list-style-type: none">1. Verify that the user's device is compatible with Apple Pay.2. Verify that the user's payment card is eligible for Apple Pay.3. Verify that the user's device has Internet access to complete Apple Pay setup. Internet access is not required for Apple Pay operation.4. Have the user delete and then enroll the same payment card to his/her own device again, to verify if the issue is with the card or the device. <p>Important: Apple Pay card enrollment and authorization process can take up to several hours depending on network conditions.</p> <p>Refer to the following articles for more information about Apple Pay:</p> <ul style="list-style-type: none">• HT201469: About Apple Pay• HT204916: Apple Pay participating banks and store cards• HT204506: Set up Apple Pay on your iPhone, iPad, or Apple Watch• HT205630: Get help adding cards to Apple Pay• HT205583: Manage the cards that you use with Apple Pay• HT201239: Use Apple Pay in stores and within apps• HT203027: Apple Pay security and privacy overview

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility. Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service. Also refer to HT204695: Handling a mixed-failure repair if appropriate. Is the device in warranty and eligible for warranty service?	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 2.	`\${nodeText.noSymptomCode}`	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI). Is the device eligible for out-of-warranty service?	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	`\${nodeText.noSymptomCode}`	
3.	Isolate the user's Apple Pay issue to one of the following scenarios: <ul style="list-style-type: none"> A - The user was attempting to make a purchase using Apple Pay contactless payments. B - The user was attempting to make an in-app purchase using Apple Pay. Which issue is relevant?	A	Go to step 4.	`\${nodeText.yesSymptomCode}`	
		B	Go to step 11.	`\${nodeText.noSymptomCode}`	
4.	Run AST 2 MRI on the user's device. This test checks the Secure Element circuitry inside the device, which is a crucial component of Apple Pay functionality. Does the device pass all tests?	Yes	Go to step 6.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 5.	`\${nodeText.noSymptomCode}`	
5.	Restart device. If unable to restart, then try to reset device. Run AST 2 MRI on the user's device again. Does the device pass all tests?	Yes	Go to step 6.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 7.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
6.	Follow steps listed in article TP1257: Contactless Payment Reader to test the functionality of the Apple Pay NFC hardware on the user's device.	Yes	ESCALATION REQUIRED. Issue cannot be duplicated. Contact ACS for additional support.	B5J	
	Assure the user that this test will not charge the customer's card and will not detect an issue with the account or the bank systems. The test checks the functionality of the Apple Pay hardware within the device only.				
	Does the device pass all tests?	No	Go to step 7.	\$(nodeText.noSymptomCode)	
7.	Follow the steps listed in article HT201252: Use iTunes on your Mac or PC to restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore .	Yes	Go to step 9.	\$(nodeText.yesSymptomCode)	
	Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.	No	Go to step 8.	\$(nodeText.noSymptomCode)	
	Did restore complete?				
8.	Perform steps listed in articles HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod and HT204770: Get help with iOS update and restore errors to attempt to restore the device.	Yes	Go to step 9.	\$(nodeText.yesSymptomCode)	
	Did restore complete?	No	Whole unit service required. Proceed with repair creation to see available options. Covered if under warranty. Check for out-of-warranty repair options.	B0J	IPHONE
9.	Run AST 2 MRI on the user's device again.	Yes	Go to step 10.	\$(nodeText.yesSymptomCode)	
	Does the device pass all tests?	No	Whole unit service required. Proceed with repair creation to see available options. Covered if under warranty. Check for out-of-warranty repair options.	B5J	IPHONE

	Check	Result	Action	Code	Commodity
10.	<p>Follow steps listed in article TP1257: Contactless Payment Reader to test the functionality of the Apple Pay NFC hardware on the user's device.</p> <p>Assure the user that this test will not charge the customer's card and will not detect an issue with the account or the bank systems. The test checks the functionality of the Apple Pay hardware within the device only.</p> <p>Does the device pass all tests?</p>	Yes	Issue resolved by restoring iOS.	`\${nodeText.yesSymptomCode}`	IPHONE
		No	Whole unit service required. Proceed with repair creation to see available options. Covered if under warranty. Check for out-of-warranty repair options.	B5J	
11.	<p>Run AST 2 MRI on the user's device.</p> <p>This test checks the Secure Element circuitry inside the device, which is a crucial component of Apple Pay functionality.</p> <p>Does the device pass all tests?</p>	Yes	<p>ESCALATION REQUIRED.</p> <p>Issue cannot be duplicated.</p> <p>Contact ACS for additional support.</p>	B5J	
		No	Go to step 12.	`\${nodeText.noSymptomCode}`	
12.	<p>Restart device. If unable to restart, then try to reset device.</p> <p>Run AST 2 MRI on the user's device again.</p> <p>Does the device pass all tests?</p>	Yes	<p>ESCALATION REQUIRED.</p> <p>Issue cannot be duplicated.</p> <p>Contact ACS for additional support.</p>	B5J	
		No	Go to step 13.	`\${nodeText.noSymptomCode}`	
13.	<p>Follow the steps listed in article HT201252: Use iTunes on your Mac or PC to restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did restore complete?</p>	Yes	Go to step 15.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 14.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
14.	Perform steps listed in articles HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod and HT204770: Get help with iOS update and restore errors to attempt to restore the device. Did restore complete?	Yes	Go to step 15.	`\${nodeText.yesSymptomCode}`	
		No	Whole unit service required. Proceed with repair creation to see available options. Covered if under warranty. Check for out-of-warranty repair options.	B0J	IPHONE
15.	Run AST 2 MRI on the user's device again. Does the device pass all tests?	Yes	Issue resolved by restoring iOS.	`\${nodeText.yesSymptomCode}`	
		No	Whole unit service required. Proceed with repair creation to see available options. Covered if under warranty. Check for out-of-warranty repair options.	B5J	IPHONE

Bluetooth Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">Bluetooth accessory not pairingBluetooth accessory not recognizedSettings > Bluetooth is grayed out	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">Verify the Bluetooth accessory's package indicates "Works with iPhone." Refer to article HT201619: About iPhone, iPad, and iPod accessories.Verify specific Bluetooth functionality is supported as identified in HT204387: iOS: Supported Bluetooth profiles.Follow steps listed in TP1045: Functional Test to test Bluetooth functionality.Remove any installed third-party case, if present. Retest. Verify a third-party case is not interfering with antennas.Go to Settings, turn Airplane Mode on for 15 seconds, then turn off. This will reset all wireless connections on the device. Retest.Reset device network settings by tapping Settings > General > Reset > Reset Network Settings. Retest. <p>This will reset all network settings, including Bluetooth pairing records, Wi-Fi passwords, VPN, and APN settings.</p> <ol style="list-style-type: none">Restart device. If unable to restart, try to reset device.Reset Bluetooth accessory to delete all paired devices. Refer to the accessory user manual for instructions to reset and unpair the accessory.On the device, go to Settings > General > Software Update to verify device has most up-to-date software. If unavailable, verify by plugging device into iTunes.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	<p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Is the device in warranty and eligible for warranty service?</p>	No	Go to step 2.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI). Is the device eligible for out-of-warranty service?	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	`\${nodeText.noSymptomCode}`	
3.	Run AST 2 MRI on user's device. Check diagnostic results to verify the presence of Bluetooth hardware. Note: You may need to update the user's device to the latest OS to run this test. Do not restore the user's device before running AST 2. Warning: Verify user has a backup or has given consent before proceeding. If AST 2 is not available, follow steps listed in TP1045: Functional Test to test Bluetooth functionality. Does MRI detect Bluetooth?	Yes	Go to step 4.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 5.	`\${nodeText.noSymptomCode}`	
4.	Attempt to pair device with a known-good Bluetooth accessory. Test for accessory functionality. Does device function as expected with a known-good Bluetooth accessory?	Yes	Issue resolved. Bluetooth accessory is not functioning as expected. Refer user to Bluetooth accessory manufacturer for support.	`\${nodeText.yesSymptomCode}`	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B47	IPHONE

	Check	Result	Action	Code	Commodity
5.	<p>Follow steps listed in article HT201252: Restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did restore complete?</p>	Yes	Go to step 7.	\${nodeText.yesSymptomCode}	
		No	Go to step 6.	\${nodeText.noSymptomCode}	
6.	<p>Perform the steps listed in articles HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod and HT204770: Get help with iOS update and restore errors to attempt to restore the device.</p> <p>Did restore complete?</p>	Yes	Go to step 7.	\${nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0J	IPHONE
7.	<p>Run AST 2 MRI on user's device.</p> <p>Check diagnostic results to verify the presence of Bluetooth hardware.</p> <p>If AST 2 is not available, follow steps listed in TP1045: Functional Test to test Bluetooth functionality.</p> <p>Does MRI detect Bluetooth?</p>	Yes	Go to step 4.	\${nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B47	IPHONE

Cannot Play Media

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">Song, video, or other media will not play	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">Restart device. If unable to restart, try to reset device.On device, go to Settings > General > Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging device into iTunes.If user's computer is available, verify that it is authorized in iTunes with the user's Apple ID. Test that media plays on the computer. If media does not play on the computer, this is an issue with the media.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility. Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service. Also refer to HT204695: Handling a mixed-failure repair if appropriate. Is the device in warranty and eligible for warranty service?	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 2.	`\${nodeText.noSymptomCode}`	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI). Is the device eligible for out-of-warranty service?	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
3.	Determine whether the media was purchased via the iTunes Store or if the media was synced directly from the user's computer.	iTunes	Go to step 4.	\$(nodeText.yesSymptomCode}	
	Was the media acquired through the iTunes Store or via the user's computer?	User's Computer	Go to step 5.	\$(nodeText.noSymptomCode}	
4.	Download known-good media (for example, a free app or a free song) onto the device to reset the encryption key.	Yes	Issue resolved.	\$(nodeText.yesSymptomCode}	
	Attempt to play original media that previously would not play.	No	Go to step 6.	\$(nodeText.noSymptomCode}	
5.	Does problem media now play?				
	Restart device and resync media from the user's computer.	Yes	Issue resolved.	\$(nodeText.yesSymptomCode}	
6.	Attempt to play original media that previously would not play.	No	Go to step 6.	\$(nodeText.noSymptomCode}	
	Does problem media now play?				
7.	Go to Settings > General > Reset > Erase All Content and Settings.	Yes	Issue resolved.	\$(nodeText.yesSymptomCode}	
	Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.	No	Go to step 7.	\$(nodeText.noSymptomCode}	
8.	Attempt to play known-good media on device.				
	Does known-good media play successfully?				
9.	Follow steps listed in article HT201252: Use iTunes on your Mac or PC to restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore .	Yes	Go to step 9.	\$(nodeText.yesSymptomCode}	
	Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.	No	Go to step 8.	\$(nodeText.noSymptomCode}	
10.	Did restore complete?				
	Perform steps listed in articles HT201210: Resolve iOS update and restore errors in iTunes and HT204770: Get help with iOS update and restore errors to attempt to restore the device.	Yes	Go to step 9.	\$(nodeText.yesSymptomCode}	
	Did restore complete?	No	Replace the whole unit. Covered if under warranty. Check for out of warranty repair options.	B0J	IPHONE

	Check	Result	Action	Code	Commodity
9.	<p>Attempt to play known-good media on device.</p> <p>Does known-good media play successfully?</p>	Yes	Issue resolved.	\${nodeText.yesSymptomCode}	
		No	<p>ESCALATION REQUIRED.</p> <p>Contact ACS for additional support.</p> <p>Click the Help button in the GSX toolbar, then choose Troubleshooting > Technical Help with a Repair > Contact Apple.</p>	B0J	

Cellular Call/Text Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">• Calls are dropped• Cannot make or receive calls• Cannot send or receive text messages• User cannot be heard while on telephone call• No signal strength bars seen on user's device display• "No Service" message displayed on user's device display• No cellular connection for calls• Searching for cellular signal• Signal strength always very weak as shown on user's device display• Weak or slow cellular connection	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <p>Note: If the user cannot be heard while on a telephone or speakerphone call, even while using wired or Bluetooth headphones, then return to the list of symptoms and select "Microphone Issues" from the troubleshooting menu.</p> <ol style="list-style-type: none">1. Remove device from case, if present, and retest to verify if signal or other interference while in carrying case could be causing the issue. See article HT201701: iPhone: Signal or other interference while in carrying case.2. Follow steps listed in HT201415: If you can't connect to a cellular network or cellular data to verify that cellular service is turned on. If the user is traveling internationally, then make sure the user's device is set up for data roaming.3. Run the Call Performance diagnostic in AST 2. Check diagnostic results to obtain call statistics and other device details that may be useful during troubleshooting.4. See articles:<ul style="list-style-type: none">• HT201673: About cellular data networks• HT201287: Use Messages with your iPhone, iPad, or iPod touch• HT204065: If you can't send or receive messages on your iPhone, iPad, or iPod touch• HT201436: Get help with visual voicemail on your iPhone5. Go to Settings and turn Airplane Mode on for 15 seconds, then off. This resets all wireless connections on the device. Retest.6. Restart device. If unable to restart, try to reset device.7. If there are no cellular signal strength indicators visible on the device, then try moving to another location and checking for a better signal.8. On the device, go to Settings > General > About to look for a carrier settings update. See article HT201270: iOS: Updating your carrier settings.9. Check the coverage maps for the user's carrier to make sure there is proper coverage in the testing area, as well as where the user is stating they are experiencing their issue.10. On the device, go to Settings > General > Software Update to verify device has most up-to-date software. If unavailable, verify by plugging the device into iTunes.11. Remove the user's SIM and closely examine it. If the SIM appears to be cut down from a larger size, inform the user that cut SIMs should not be used with this device. This device requires an unmodified SIM and cut SIMs may cause cellular issues.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility. Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service. Also refer to HT204695: Handling a mixed-failure repair if appropriate. Is the device in warranty and eligible for warranty service?	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 2.	`\${nodeText.noSymptomCode}`	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI). Is the device eligible for out-of-warranty service?	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	`\${nodeText.noSymptomCode}`	
3.	Identify whether the device uses a CDMA or GSM network. Is the device running on a CDMA or GSM network?	GSM	Go to step 4.	`\${nodeText.yesSymptomCode}`	
		CDMA	Go to step 5.	`\${nodeText.noSymptomCode}`	
4.	Using the SIM removal tool, eject the SIM card tray and reseal the SIM card. Is the cellular call/text issue resolved?	Yes	Issue resolved.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 6.	`\${nodeText.noSymptomCode}`	
5.	Contact carrier to update the Preferred Roaming List and verify the account is active. Is the cellular call/text issue resolved?	Yes	Issue resolved.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 8.	`\${nodeText.noSymptomCode}`	
6.	Install user's SIM card into a known-good phone. Is the cellular call/text issue resolved?	Yes	Go to step 8.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 7.	`\${nodeText.noSymptomCode}`	
7.	From another phone, call the cellular carrier and verify user's account is active. Is the cellular call/text issue resolved?	Yes	Issue resolved.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 8.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
8.	Go to Settings > General > Reset > Reset Network Settings. Warning: This will erase all stored Wi-Fi passwords. Verify that user has given consent before proceeding. Is the cellular call/text issue resolved?	Yes	Issue resolved by resetting network settings.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 9.	`\${nodeText.noSymptomCode}`	
9.	Go to Settings > General > Reset > Erase All Content and Settings. Warning: This will delete all user data on the device. Verify that user has a backup or has given consent before proceeding. Is the cellular call/text issue resolved?	Yes	Issue resolved by erasing all content and settings.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 10.	`\${nodeText.noSymptomCode}`	
10.	Follow the steps listed in article HT201252: Use iTunes on your Mac or PC to restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore . Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding. Did restore complete?	Yes	Go to step 12.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 11.	`\${nodeText.noSymptomCode}`	
11.	Perform the steps listed in articles HT201210: Resolve iOS update and restore errors in iTunes and HT204770: Get help with iOS update and restore errors to attempt to restore the device. Did restore complete?	Yes	Go to step 12.	`\${nodeText.yesSymptomCode}`	
		No	Replace the whole unit. Covered if under warranty. Check for out-of-warranty repair options.	B0J	IPHONE
12.	Determine whether the device has returned to normal operation after restoring it. Is the cellular call/text issue resolved?	Yes	Issue resolved by restoring iOS.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 13.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
13.	<p>Determine which of the following symptoms was observed on the user's device.</p> <p>If the symptom was:</p> <ul style="list-style-type: none"> No signal strength bars seen on user's device display "No Service" message displayed on user's device display No cellular connection for calls or data Searching for cellular signal <p>Answer "No Cellular Connection" to the question below.</p>	No Cellular Connection	Replace the whole unit. Covered if under warranty. Check for out-of-warranty repair options.	B08	IPHONE
	<p>If the symptom was:</p> <ul style="list-style-type: none"> Calls dropped during call Calls dropped when making or receiving calls Signal strength always very weak as shown on user's device display Weak or slow cellular connection for calls or data <p>Answer "Weak Connection" to the question below.</p> <p>Which symptom describes the issue?</p>	Weak Connection	Replace the whole unit. Covered if under warranty. Check for out-of-warranty repair options.	B7B	IPHONE

Cellular Data Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">• Cannot load web pages• Cannot send or receive email• Cannot send or receive cellular data, such as maps, weather, stocks	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">1. Remove device from case, if present. Refer to article HT201701: iPhone: Signal or other interference while in carrying case.2. Follow steps listed in HT201415: If you can't connect to a cellular network or cellular data to verify that cellular data is turned on. If the user is traveling internationally, then make sure the user's device is set up for data roaming.3. Go to Settings, turn on Airplane Mode for 15 seconds, then turn it off. This will reset all wireless connections on the device. Retest.4. Restart device. If unable to restart, try to reset device.5. If there are no cellular signal strength indicators visible on the device, then try moving to another location and check for a better signal.6. If the issue is with email, then verify that the user's email account credentials are accurate. Refer to article HT201419: Get help with Mail on iPhone, iPad, and iPod touch.7. (CDMA only) Update the PRL on the phone.<ul style="list-style-type: none">◦ Sprint: Dial ##update# and tap Send◦ Verizon: Dial *228, Tap Send, choose option 2.8. On the device, go to Settings > General > About to look for a carrier settings update. See article HT201270: iOS: Updating your carrier settings.9. Check the coverage maps for the customer's carrier to make sure there is proper coverage in the testing area, as well as where the customer is stating they are experiencing their issue.10. On the device, go to Settings > General > Software Update to verify device has most up-to-date software. If unavailable, verify by plugging the device into iTunes.11. Remove the user's SIM and closely examine it. If the SIM appears to be cut down from a larger size, inform the user that cut SIMs should not be used with this device. This device requires the proper Nano-SIM and cut SIMs may cause cellular data issues.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility. Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service. Also refer to article HT204695: Handling a mixed-failure repair if appropriate. Is the device in warranty and eligible for warranty service?	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 2.	`\${nodeText.noSymptomCode}`	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI). Is the device eligible for out-of-warranty service?	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	`\${nodeText.noSymptomCode}`	
3.	Go to Settings > General > Reset > Reset Network Settings. Warning: This will erase all stored Wi-Fi passwords. Verify that user has given consent before proceeding. Did this resolve the cellular data issue?	Yes	Issue resolved by resetting network settings.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 4.	`\${nodeText.noSymptomCode}`	
4.	On user's device: <ul style="list-style-type: none"> • Turn on Wi-Fi • Turn off Cellular Data • Connect to a known good Wi-Fi network Launch the Maps app and verify that a map loads. Does the map load successfully on the user's device?	Yes	Go to step 5.	`\${nodeText.yesSymptomCode}`	
		No	Go to "Wi-Fi Issues" troubleshooting flow.	`\${nodeText.noSymptomCode}`	
5.	On user's device: <ul style="list-style-type: none"> • Turn off Wi-Fi • Turn on Cellular Data • Connect to a known-good cellular data network Launch the Maps app and verify that a map loads. Does the map load successfully on the user's device?	Yes	Issue cannot be duplicated.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 6.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
6.	Check if the issue is isolated to a single app. Review the app settings to adjust cellular-related items.	Yes	Go to “App Issues” troubleshooting flow.	`\${nodeText.yesSymptomCode}`	
	If the issue is with email, then verify that the user’s email account credentials are accurate. Refer to article HT201419: Get help with Mail on iPhone, iPad, and iPod touch	No	Go to step 7.	`\${nodeText.noSymptomCode}`	
	Is the issue isolated to a single app?				
7.	Identify whether the device uses a CDMA or GSM network.	CDMA	Go to step 12.	`\${nodeText.yesSymptomCode}`	
	Is the device running on a CDMA or GSM network?	GSM	Go to step 8.	`\${nodeText.noSymptomCode}`	
8.	Go to Settings > Phone > SIM PIN.	Yes	Issue resolved.	`\${nodeText.yesSymptomCode}`	
	If the SIM is locked, unlock it. See article HT201529: Understanding the SIM PIN .	No	Go to step 9.	`\${nodeText.noSymptomCode}`	
	Did this resolve the cellular data issue?				
9.	Using SIM removal tool, eject SIM card tray and reseal SIM card.	Yes	Issue resolved.	`\${nodeText.yesSymptomCode}`	
	Did this resolve the cellular data issue?	No	Go to step 10.	`\${nodeText.noSymptomCode}`	
10.	Install user’s SIM card into a known-good phone.	Yes	Go to step 15.	`\${nodeText.yesSymptomCode}`	
	Did this resolve the cellular data issue?	No	Go to step 11.	`\${nodeText.noSymptomCode}`	
11.	From another phone, call the cellular carrier and verify that the user’s account is active.	Yes	Issue resolved.	`\${nodeText.yesSymptomCode}`	
	Did this resolve the cellular data issue?	No	Go to step 15.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
12.	Contact carrier to verify the following items:	Yes	Issue resolved.	`\${nodeText.yesSymptomCode}`	
	<ul style="list-style-type: none">• Is the account active?• Is there an account block related to incompatible plans?• Are there any billing related issues or blocks?• Are there any feature restrictions on the account?• Are there any server side logs accessing or using the network?• Is there any localized outage information?• Is there a specific resolution to a particular event in the customer's area?	No	Go to step 13.	`\${nodeText.noSymptomCode}`	
	Also perform any updates suggested by the carrier.				
	Did this resolve the cellular data issue?				
13.	Contact carrier to move the customer’s account to a known-good, unlocked, test iPhone.	Yes	Issue resolved.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 14.	`\${nodeText.noSymptomCode}`	
	Did this resolve the cellular data issue?				
14.	Contact the carrier and have them attempt to determine if the test phone was properly setup and if there are any network errors that could cause the customer's issue on the test or original iPhone.	Yes	Issue resolved.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 15.	`\${nodeText.noSymptomCode}`	
	Did this resolve the cellular data issue?				
15.	Go to Settings > General > Reset > Erase All Content and Settings.	Yes	Issue resolved by erasing all content and settings.	`\${nodeText.yesSymptomCode}`	
	Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.	No	Go to step 16.	`\${nodeText.noSymptomCode}`	
	Did this resolve the cellular data issue?				

	Check	Result	Action	Code	Commodity
16.	<p>Follow the steps listed in article HT201252: Use iTunes on your Mac or PC to restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did restore complete?</p>	Yes	Go to step 18.	\${nodeText.yesSymptomCode}	
		No	Go to step 17.	\${nodeText.noSymptomCode}	
17.	<p>Perform steps listed in articles HT201210: Resolve iOS update and restore errors in iTunes and HT204770: Get help with iOS update and restore errors to attempt to restore the device.</p> <p>Did restore complete?</p>	Yes	Go to step 18.	\${nodeText.yesSymptomCode}	
		No	Replace the whole unit. Covered if under warranty. Check for out of warranty repair options.	B0J	IPHONE
18.	<p>Determine whether the device has returned to normal operation after restoring it.</p> <p>Did this resolve the cellular data issue?</p>	Yes	Issue resolved by restoring iOS.	\${nodeText.yesSymptomCode}	
		No	Go to step 19.	\${nodeText.noSymptomCode}	
19.	<p>Determine which of the following symptoms was observed on the user's device.</p> <p>If the symptom was:</p> <ul style="list-style-type: none"> No signal strength bars seen on user's device display "No Service" message displayed on user's device display No cellular connection for calls or data Searching for cellular signal <p>Answer "No Cellular Connection" to the question below.</p> <p>If the symptom was:</p> <ul style="list-style-type: none"> Signal strength always very weak as shown on user's device display Slow cellular data connection <p>Answer "Slow Connection" to the question below.</p> <p>Which symptom describes the issue?</p>	No Cellular Connection	Replace the whole unit. Covered if under warranty. Check for out of warranty repair options.	B08	IPHONE
		Slow Connection	Replace the whole unit. Covered if under warranty. Check for out of warranty repair options.	B7B	IPHONE

iTunes/Sync Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">Device not recognized in iTunesDevice will not sync	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">1. Verify cable is securely attached to both device and computer.2. Try the Lightning connector in both orientations.3. Try connecting device to a different USB 2.0 port on computer (not on keyboard or an external hub).4. Disconnect other USB devices from the computer.5. Verify the device accepts power with a known-good power adapter and cord. If not, return to the list of symptoms and select “Battery Will Not Charge” from the troubleshooting menu.6. Restart device. If unable to restart, try to reset device.7. Restart computer and reconnect device.8. For Windows, refer to articles HT204095: If iTunes doesn't recognize your iPhone, iPad, or iPod and HT203188: Restart the Apple Mobile Device Service (AMDS) on Windows.9. Check for third-party software conflicts.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 4.	\$(nodeText.yesSymptomCode)	
	<p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Also refer to HT204695: Handling a mixed-failure repair if appropriate.</p> <p>Is the device in warranty and eligible for warranty service?</p>	No	Go to step 2.	\$(nodeText.noSymptomCode)	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).	Yes	Go to step 3.	\$(nodeText.yesSymptomCode)	
	<p>Is the device eligible for out-of-warranty service?</p>	No	Return device to user. Due to damage, the device is no longer eligible for support.	\$(nodeText.noSymptomCode)	

	Check	Result	Action	Code	Commodity
3.	Inspect the device for liquid damage by checking for: <ul style="list-style-type: none"> • Internal LCI red • Signs of corrosion • Presence of liquid Is liquid damage present?	Yes	Replace whole unit out of warranty.	B90	IPHONE
		No	Go to step 4.	\$(nodeText.noSymptomCode)	
4.	Check that Lightning connector is not obstructed with lint or debris. Attempt to clean any debris in accordance with TP320: iPhone, iPad, iPod: Cleaning Procedures . Are you able to clean the connector?	Yes	Go to step 5.	\$(nodeText.yesSymptomCode)	
		No	Out-of-warranty replacement due to obstruction.	B91	IPHONE
5.	Connect the device to user's computer (if available) and see whether it is recognized in iTunes. If user's computer is not available, select the "No" answer. Does iTunes recognize the device?	Yes	Go to step 11.	\$(nodeText.yesSymptomCode)	
		No	Go to step 6.	\$(nodeText.noSymptomCode)	
6.	To troubleshoot this issue completely, a known-good Lightning to USB cable is required. Do you have immediate access to a known-good Lightning to USB cable?	Yes	Go to step 8.	\$(nodeText.yesSymptomCode)	
		No	Go to step 7.	\$(nodeText.noSymptomCode)	
7.	Inspect the user's Lightning to USB cable for damage. Did you find any damage to this cable or its components?	Yes	Replace user's Lightning to USB cable out-of-warranty.	B09	IPHONE ACCESSORY
		No	Go to step 9.	\$(nodeText.noSymptomCode)	
8.	Substitute a known-good Lightning to USB cable and retest. Does iTunes recognize the device?	Yes	Replace Lightning to USB Cable. Covered if under warranty. Check for out-of-warranty repair options.	B09	IPHONE ACCESSORY
		No	Go to step 9.	\$(nodeText.noSymptomCode)	

	Check	Result	Action	Code	Commodity
9.	<p>Connect the device to a known-good computer running the latest version of iTunes and see whether the device is recognized in iTunes.</p> <p>Does iTunes recognize the device?</p>	Yes	<p>User needs to reinstall iTunes and/or troubleshoot issue with computer.</p> <p>For Windows, refer to articles HT204313: Remove iTunes and related software components from Windows XP and HT204275: Remove and reinstall iTunes and related software components for Windows 7 and later.</p>	\$(nodeText.yesSymptomCode}	
		No	Go to step 10.	\$(nodeText.noSymptomCode}	
10.	<p>Put device into recovery mode and reconnect to known-good computer. See article TP337: iOS: Recovery Mode Restore.</p> <p>Verify if device is now recognized in iTunes.</p> <p>Does iTunes recognize the device?</p>	Yes	Go to step 13.	\$(nodeText.yesSymptomCode}	
		No	<p>Replace the whole unit. Covered if under warranty. Check for out of warranty repair options.</p>	B0J	IPHONE
11.	<p>Attempt to sync the device with iTunes.</p> <p>Was the sync successful?</p>	Yes	Issue resolved.	\$(nodeText.yesSymptomCode}	
		No	Go to step 12.	\$(nodeText.noSymptomCode}	
12.	<p>Go to Settings > General > Reset > Erase All Content and Settings.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Attempt to sync device with iTunes.</p> <p>Was the sync successful?</p>	Yes	Issue resolved.	\$(nodeText.yesSymptomCode}	
		No	Go to step 13.	\$(nodeText.noSymptomCode}	

	Check	Result	Action	Code	Commodity
13.	<p>Restore device in recovery mode using the latest version of iTunes. See article TP337: iOS: Recovery Mode Restore.</p> <p>Warning: This will delete all user data on the device. Verify that user has a backup or has given consent before proceeding.</p> <p>Attempt to sync the device with iTunes.</p> <p>Did restore complete?</p>	Yes	Go to step 14.	\${nodeText.yesSymptomCode}	
		No	Replace the whole unit. Covered if under warranty. Check for out-of-warranty repair options.	B0J	IPHONE
14.	<p>Attempt to sync the device with iTunes.</p> <p>Was the sync successful?</p>	Yes	Issue resolved by restoring iOS.	\${nodeText.yesSymptomCode}	
		No	<p>ESCALATION REQUIRED.</p> <p>Contact ACS for additional support.</p> <p>Click the Help button in the GSX toolbar, then choose Troubleshooting > Technical Help with a Repair > Contact Apple.</p>	B0J	

SIM Card Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">“Invalid SIM card installed.” message“No SIM card installed.” message“Different SIM detected. Please connect to iTunes.” message	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">SIM alert messages can be caused by inserting a non-Apple authorized carrier SIM card. Verify that SIM card is authorized to be used with this particular device.SIM alert messages can be caused by inserting a SIM card that is not the SIM used for the device’s current activation. For example, if a new SIM was used to activate the device, then the previous SIM or a different SIM card is later inserted, such as during testing.Verify that the correct SIM tray is installed in the user’s device. SIM trays for iOS devices vary slightly in size and shape, so using the incorrect SIM tray may prevent the device from detecting an inserted SIM card. Refer to HT202645: Learn which size SIM card your iPhone or iPad uses and HT201337: Remove or switch the SIM card in your iPhone or iPad for more information.Restart device. If unable to restart, try to reset device.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 3.	\$(nodeText.yesSymptomCode}	
	Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service. Is the device in warranty and eligible for warranty service?	No	Go to step 2.	\$(nodeText.noSymptomCode}	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).	Yes	Go to step 3.	\$(nodeText.yesSymptomCode}	
	Is the device eligible for out-of-warranty service?	No	Return device to user. Due to damage, the device is no longer eligible for support.	\$(nodeText.noSymptomCode}	

	Check	Result	Action	Code	Commodity
3.	Using SIM removal tool, eject SIM card tray. Did the SIM tray eject?	Yes	Go to step 4.	\$(nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B91	IPHONE
4.	Inspect the SIM card tray for any damage. Also, verify that the correct SIM tray is installed in the user's device. SIM trays for iOS devices vary slightly in size and shape, so using the incorrect SIM tray may prevent the device from detecting an inserted SIM card. Refer to HT202645: Learn which size SIM card your iPhone or iPad uses and HT201337: Remove or switch the SIM card in your iPhone or iPad for more information.	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B91	IPHONE COMPONENT
	Does the SIM tray appear damaged or is incorrect size or shape?	No	Go to step 5.	\$(nodeText.noSymptomCode}	
5.	Remove the user's SIM and closely examine it. If the SIM appears to be cut down from a larger size, inform the user that cut SIMs should not be used with this device. This device requires the proper nano-SIM and cut SIMs may cause cellular issues.	Yes	Issue resolved. Replace SIM card with the correct carrier-supported SIM card.	\$(nodeText.yesSymptomCode}	
	Does the user's SIM card appear to be cut down from a larger size?	No	Go to step 6.	\$(nodeText.noSymptomCode}	
6.	Reinstall the user's SIM card. Ensure the SIM card is fully seated in the enclosure.	Yes	Issue resolved by reseating SIM card.	\$(nodeText.yesSymptomCode}	
	Did this resolve the SIM card issue?	No	Go to step 7.	\$(nodeText.noSymptomCode}	
7.	Install user's SIM card into a known-good phone.	Yes	Go to step 8.	\$(nodeText.yesSymptomCode}	
	Did the user's SIM work in a known-good phone?	No	Issue resolved. Replace SIM card with the correct carrier-supported SIM card.	\$(nodeText.noSymptomCode}	
	Using USB Microscope, inspect SIM card presence sensor switch and contact pins on the SIM card reader module for unauthorized modifications. Refer to article TP960: USB Microscope Camera		This device has unauthorized modifications. Document test failure, process		

8.	<p>Setup for instructions to set up the USB microscope.</p> <p>Note: To perform the following take-apart and reassembly steps, refer to the specific procedure for the model device being serviced. If you are unsure regarding this procedure, contact ACS for further guidance.</p>	Yes	a repair, use part number 011-0659 Micro-Inspection 1. Return the device to the user.	<p> <code> \${nodeText.yesSymptomCode} </code> </p>	
	<p>1. Open device.</p> <p>Warning: When opening the device, be careful to avoid damaging or tearing the home button flex cable that is connected from the underside of the display assembly to the logic board. Remove the home button flex cabling and disconnect the home button flex cable connector from the logic board using ESD-safe tweezers before continuing. Refer to the service guide procedure titled “Open Device” for complete instructions.</p> <p>2. Closely inspect the SIM card presence sensor switch, located on the SIM card reader module, which is on the top of the logic board.</p> <p>Figure 1 – SIM card presence sensor switch in the closed position, the correct position when no SIM is installed.</p> <p>Figure 2 – SIM card presence sensor switch in the open position, the correct position when a SIM card is installed.</p> <p>3. Insert and remove the SIM tray with a SIM card and observe the position of the SIM card presence sensor switch. The switch position should appear as Figure 1 when no SIM card is installed and Figure 2 when a SIM card is installed correctly.</p> <p>4. If the SIM card presence sensor switch does not appear as Figures 1 and 2, this may explain the cause of the symptoms for this issue. Below are examples of unauthorized modification and</p>		Service required. Proceed with repair creation to see available options. If		

<p>damage:</p> <p>Figure 3 – A spot of solder covering the contacts on the SIM detect switch.</p> <p>Figure 4 – White glue covering the contacts on the SIM detect switch.</p> <p>5. Inspect and verify that all six SIM contact pins on the top of the SIM card reader module are in an upright position when no SIM is inserted. All pins should appear in the same upright position, not pushed down to prevent SIM contact.</p> <p>Figure 5 – Center pin shows the correct upright position. Left and right pins are pushed down to prevent SIM contact.</p> <p>6. Close the device.</p> <p>Warning: Before closing the display, verify the home button flex cable connector is securely connected to the logic board and the home button flex cowling has been reattached using ESD-safe tweezers. Refer to the service guide procedure titled “Open Device” for complete instructions.</p> <p>Note: If you are unsure regarding this procedure, contact ACS for further guidance.</p> <p>Are unauthorized modifications present?</p>	No	<p>available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.</p>	B33	IPHONE
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Wi-Fi Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">• Unable to locate a nearby Wi-Fi network• Unable to connect to a Wi-Fi network• Unable to access the Internet• Settings > Wi-Fi is grayed out	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">1. Go to Settings > Wi-Fi and verify that you can turn WI-Fi off and on again.2. If Wi-Fi is grayed out in Settings > Wi-Fi, refer to article HT204324: If Wi-Fi is grayed out or dim on your iPhone, iPad, or iPod touch.3. Remove any installed third-party case, if present. Retest. Verify a third-party case is not interfering with antennas.4. Check Wi-Fi signal strength. If low, move closer to Wi-Fi router or hotspot.5. Follow steps listed in HT202639: Connect to Wi-Fi on your iPhone, iPad, or iPod touch. Reminder: If the network is hidden, you must choose Other and enter the network name to join.6. Go to Settings > Wi-Fi and tap the blue circle to the right of the network name and signal strength. Choose “Forget this Network” and then connect to a known-good Wi-Fi network.7. Restart the device. If unable to restart, try to reset the device.8. On the device, go to Settings > General > Software Update to verify that device has the most up-to-date software. If unavailable, verify by plugging device into iTunes.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	<p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Is the device in warranty and eligible for warranty service?</p>	No	Go to step 2.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
2.	<p>Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).</p> <p>Is the device eligible for out-of-warranty service?</p>	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	`\${nodeText.noSymptomCode}`	
3.	<p>Follow all steps listed in HT204051: If your iPhone, iPad, or iPod touch won't connect to a Wi-Fi network including steps to reset network settings on the user's device.</p> <p>Is Wi-Fi issue resolved?</p>	Yes	Issue resolved by resetting network settings.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 4.	`\${nodeText.noSymptomCode}`	
4.	<p>Run AST 2 MRI on user's device.</p> <p>Check diagnostic results to verify the presence of Wi-Fi hardware.</p> <p>Note: You may need to update the user's device to the latest OS to run this test. Do not restore the user's device before running AST 2.</p> <p>Warning: Verify user has a backup or has given consent before proceeding.</p> <p>If AST 2 is not available, follow the steps listed in TP1045: iPhone: Functional Test to test Wi-Fi functionality.</p> <p>Does MRI detect Wi-Fi?</p>	Yes	Go to step 5.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 6.	`\${nodeText.noSymptomCode}`	
5.	<p>Follow the steps listed in TP1045: iPhone: Functional Test to test Wi-Fi functionality.</p> <p>Is the device able to join a known-good Wi-Fi network?</p>	Yes	Issue cannot be duplicated.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 6.	`\${nodeText.noSymptomCode}`	
6.	<p>Follow steps listed in article HT201252: Restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did restore complete?</p>	Yes	Go to step 8.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 7.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
7.	Perform steps listed in articles HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod and HT204770: Get help with iOS update and restore errors to attempt to restore the device. Did restore complete?	Yes	Go to step 8.	`\${nodeText.yesSymptomCode}`	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0J	IPHONE
8.	Run AST 2 MRI on user's device. Check diagnostic results to verify the presence of Wi-Fi hardware. If AST 2 is not available, follow the steps listed in TP1045: iPhone: Functional Test to test Wi-Fi functionality. Does MRI detect Wi-Fi?	Yes	Go to step 9.	`\${nodeText.yesSymptomCode}`	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B45	IPHONE
9.	Follow the steps listed in TP1045: iPhone: Functional Test to test Wi-Fi functionality. Is the device able to join a known-good Wi-Fi network?	Yes	Issue resolved by restored iOS.	`\${nodeText.yesSymptomCode}`	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B45	IPHONE

Cracked Glass

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">Cracked display glass	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">Refer to SM231: iPhone Visual/Mechanical Inspection (VMI) Guide for iPhone 5, 5c, 5s, and SE, 070-3037 to determine whether damage is catastrophic. <p>Note: Catastrophic damage is not eligible for service.</p> <ol style="list-style-type: none">Verify whether this issue appears to be safety-related. Refer to HT203291: Addressing cracked iPhone, iPad, iPod touch, or Apple Watch displays and OP44: Handling Potential Product Safety Issues for more information.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Determine whether the device has a single hairline crack in the display, or has multiple cracks in the display.				
	A single hairline crack would have: <ul style="list-style-type: none">No point of impactNo spiderweb fracturing Select "Multiple Cracks" for any of these symptoms: <ul style="list-style-type: none">Multiple cracks in the displaySpiderweb fracturingLCD fractures under the cover glassSingle hairline crack with point of impact Does the device have a single hairline crack in the display, or multiple cracks in the display?	Hairline Crack	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B98	IPHONE
		Multiple Cracks	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B92	IPHONE

Display Anomalies

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">Pixel anomaliesParticles or debris under the glass	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <p>1. Clean display with a clean microfiber cloth.</p> <p>Important: Do not use liquids, sprays, or abrasives to clean the device.</p>

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	<p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Is the device in warranty and eligible for warranty service?</p>	No	Go to step 2.	`\${nodeText.noSymptomCode}`	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	<p>Is the device eligible for out-of-warranty service?</p>	No	Return device to user. Due to damage, the device is no longer eligible for support.	`\${nodeText.noSymptomCode}`	
3.	Run the Display Pixel Anomalies diagnostic in AST 2. This test generates test patterns that help identify any display anomalies.		Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B57	IPHONE
	<p>Refer to article HT202025: About LCD display pixel anomalies for Apple products released in 2010 and later to determine whether the observed display anomalies qualify for display replacement.</p> <p>Do the observed display anomalies qualify for whole unit replacement?</p>	Yes	Issue cannot be duplicated.	`\${nodeText.noSymptomCode}`	
		No			

Display Rotation Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">Display does not rotate when device changes orientation	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">Verify screen rotation lock is off. Check for rotation lock icon (a circular arrow with a lock inside) in upper right-hand corner of screen. If this icon is visible, follow the steps in article HT204547: If the screen doesn't rotate on your iPhone, iPad, or iPod touch to disable it.Hold iPhone in a vertical plane (upright) – not horizontal (flat) – when rotating between portrait and landscape orientation.Not all iOS apps are designed to rotate. Some may use only portrait or landscape mode, or switch depending on the content. Follow steps listed in TP1045: Functional Test to test display rotation (accelerometer) functionality.Restart device. If unable to restart, try to reset device.On device, go to Settings > General > Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging device into iTunes.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	<p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Is the device in warranty and eligible for warranty service?</p>	No	Go to step 2.	`\${nodeText.noSymptomCode}`	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	<p>Is the device eligible for out-of-warranty service?</p>	No	Return device to user. Due to damage, the device is no longer eligible for support.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
3.	Run AST 2 MRI on user's device.	Yes	Go to step 4.	`\${nodeText.yesSymptomCode}`	
	<p>Check diagnostic results to verify the presence of accelerometer and gyroscope sensor hardware.</p> <p>Note: You may need to update the user's device to the latest OS to run this test. Do not restore the user's device before running AST 2.</p> <p>Warning: Verify user has a backup or has given consent before proceeding.</p> <p>If AST 2 is not available, then follow steps listed in TP1045: Functional Test to test display rotation (accelerometer) functionality.</p> <p>Does MRI detect accelerometer and gyroscope sensor hardware?</p>	No	Go to step 5.	`\${nodeText.noSymptomCode}`	
4.	<p>Follow steps listed in TP1045: Functional Test to test display rotation (accelerometer) functionality.</p> <p>Does the display rotate properly?</p>	Yes	Issue cannot be duplicated.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 5.	`\${nodeText.noSymptomCode}`	
5.	<p>Follow the steps listed in article HT201252: Restore your iPhone, iPad or iPod touch to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did restore complete?</p>	Yes	Go to step 7.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 6.	`\${nodeText.noSymptomCode}`	
6.	<p>Perform the steps listed in articles HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod and HT204770: Get help with iOS update and restore errors to attempt to restore the device.</p> <p>Did restore complete?</p>	Yes	Go to step 7.	`\${nodeText.yesSymptomCode}`	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0J	IPHONE

	Check	Result	Action	Code	Commodity
7.	Run AST 2 MRI on user's device.	Yes	Go to step 8.	\${nodeText.yesSymptomCode}	
	<p>Check diagnostic results to verify the presence of accelerometer and gyroscope sensor hardware.</p> <p>If AST 2 is not available, then follow steps listed in TP1045: Functional Test to test display rotation (accelerometer) functionality.</p> <p>Does MRI detect accelerometer and gyroscope sensor hardware?</p>	No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B5C	IPHONE
8.	<p>Follow steps listed in TP1045: Functional Test to retest display rotation (accelerometer) functionality.</p> <p>Does the display rotate properly?</p>	Yes	Issue resolved by restoring iOS.	\${nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B5C	IPHONE

Multi-Touch Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">Multi-Touch is slow to respondIsolated areas not respondingSlide to power on/off not respondingErratic response to touchUnexpected touchOverly-sensitive touch response	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">1. Verify that this issue is related to Multi-Touch and not related to the device being unresponsive. To verify that the device is responding normally, view any clock display on the user's device and verify that it updates once every minute. For example, go to the Home screen on the user's device and view the clock at the top of the display. If the device supports iOS 7 or later, you can also view the Clock app icon. The second hand on the Clock app icon should move smoothly around the clock dial. If a clock display does not update as expected, this may indicate an unresponsive device, and you should return to the list of symptoms and select “ Unexpected Freeze/Restart/Power Off, ‘Connect to iTunes’ ” from the troubleshooting menu.2. Clean display with a clean microfiber cloth. Important: Do not use liquids, sprays, or abrasives to clean the device.3. Rule out environmental causes by checking for use of protective films, cases, gloves, or a stylus. Verify user touches screen with finger pads and not fingernails.4. On the device, go to Settings > General > Software Update to verify device has most up-to-date software. If unavailable, verify by plugging device into iTunes.5. Quit any background apps.6. Restart device. If unable to restart, try to reset device.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	<p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Is the device in warranty and eligible for warranty service?</p>	No	Go to step 2.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	Is the device eligible for out-of-warranty service?	No	Return device to user. Due to damage, the device is no longer eligible for support.	`\${nodeText.noSymptomCode}`	
3.	Run AST 2 Multi-Touch test if the symptom is that the user's device is not responding to touch properly.	Yes	Issue cannot be duplicated. Remind user that protective films, cases, styluses, gloves, or fingernails can prevent Multi-Touch from responding properly.	`\${nodeText.yesSymptomCode}`	
	Run AST 2 Unexpected Touch test if the symptom is that the user's device is overly-sensitive to touch response.				
	If AST 2 is not available, follow steps listed in TP1045: Functional Test to test Multi-Touch functionality.	No	Go to step 4.	`\${nodeText.noSymptomCode}`	
	Be sure to test the device in all rotated orientations.				
	Did the display respond as expected?				
4.	Note: You should refer to the specific take-apart procedure for your device model for instructions to perform the following take-apart and reassembly steps:	Yes	Issue resolved by reseating internal display flex cables.	`\${nodeText.yesSymptomCode}`	
	<ol style="list-style-type: none"> Open device. Caution: When opening the device, be careful to avoid damaging or tearing the home button flex cable that is connected from the underside of the display assembly to the logic board. Be sure to remove the home button flex cowl and disconnect the home button flex cable connector from the logic board using ESD-safe tweezers, before doing anything else inside. Refer to the service guide procedure titled 'Open Device' for complete instructions. Disconnect the group of flex cables connecting the display to the logic board. Examine each connector for any signs of damage or debris. If display flex connectors appear normal and not damaged, reconnect this group of flex cables, gently reseating each connector carefully and completely with light finger pressure, using two fingers if possible. If any display flex cable appears abnormal or 		Service required. Proceed with repair creation to see available options. If available,		

<p>damaged, answer “No” to the question below.</p> <p>6. Reassemble by installing any removed components and closing the device.</p> <p>Caution: Before closing the display, verify that the home button flex cable connector is securely connected to the logic board, and that the home button flex cowling has been reattached, using ESD-safe tweezers. Refer to the service guide procedure titled 'Open Device' for complete instructions.</p> <p>Run AST 2 Multi-Touch test if the symptom is that the user’s device is not responding to touch properly.</p> <p>Run AST 2 Unexpected Touch test if the symptom is that the user’s device is overly-sensitive to touch response.</p> <p>If AST 2 is not available, follow steps listed in TP1045: Functional Test to test Multi-Touch functionality.</p> <p>Be sure to test the device in all rotated orientations.</p> <p>Did the display respond as expected?</p>	No	choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B56	IPHONE
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No Video / Poor Image

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">• No image on device display• Distorted video• Rainbow effect• Poor image quality• Non-uniform color• Displayed images have incorrect white balance (images have different color hues than expected)• Bad contrast• Brightness or backlight issues• Light bleed• Horizontal/vertical lines• White screen• Blank/Black screen• Flickering	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <p>Note: This troubleshooting flow is intended for no video or poor image quality issues only. If the device will not turn on, return to the list of symptoms and select “No Power” from the troubleshooting menu.</p> <ol style="list-style-type: none">1. Clean the display with a clean microfiber cloth. Important: Do not use liquids, sprays, or abrasives to clean the device.2. Rule out environmental causes by checking and removing protective films and cases.3. On the device, go to Settings > General > Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging device into iTunes.4. Try rotating the device to confirm if the issue is caused by media, software, or the display.5. Go to Settings > Display & Brightness and turn Auto-Brightness off then on again, then adjust the brightness level. Recheck the user's device to see if this resolved the issue. Changing this setting in this way resets all ambient light sensor (ALS) properties.6. Night Shift is a software feature which gradually shifts the white balance to the warmer end of the spectrum (slightly redder, less bluish hues). If the user reports symptoms related to white balance, refer to article TP1445: Night Shift.7. Charge the device battery. Connect to a power outlet and charge with a USB Power Adapter and Lightning to USB cable for 10 minutes. Verify that the device accepts power and turns on. If the device still does not turn on, return to the list of symptoms and select “No Power” from the troubleshooting menu.8. Restart the device. If unable to restart, attempt to reset the device <p>Refer to article HT202613: Adjust the display settings on your iPhone, iPad, or iPod touch for more information about using Brightness settings.</p>

Deep Dive

	Check	Result	Action	Code	Commodity
1.	<p>Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.</p> <p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Is the device in warranty and eligible for warranty service?</p>	Yes	Go to step 3.	\$(nodeText.yesSymptomCode)	
		No	Go to step 2.	\$(nodeText.noSymptomCode)	
2.	<p>Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).</p> <p>Is the device eligible for out-of-warranty service?</p>	Yes	Go to step 3.	\$(nodeText.yesSymptomCode)	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	\$(nodeText.noSymptomCode)	
3.	<p>Follow the steps listed in article HT201252: Use iTunes on your Mac or PC to restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did restore complete?</p>	Yes	Go to step 5.	\$(nodeText.yesSymptomCode)	
		No	Go to step 4.	\$(nodeText.noSymptomCode)	
4.	<p>Perform steps listed in articles HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod and HT204770: Get help with iOS update and restore errors to attempt to restore the device.</p> <p>Did restore complete?</p>	Yes	Go to step 5.	\$(nodeText.yesSymptomCode)	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0J	IPHONE
5.	<p>Run Display Backlight and Color / Display Image Quality diagnostics in AST 2.</p> <p>Does the device pass all diagnostic tests?</p>	Yes	Issue resolved.	\$(nodeText.yesSymptomCode)	
		No	Go to step 6.	\$(nodeText.noSymptomCode)	

	Check	Result	Action	Code	Commodity
6.	<p>Note: You should refer to the specific take-apart procedure for your device model for instructions to perform the following take-apart and reassembly steps:</p> <ol style="list-style-type: none">1. Open device. Caution: When opening the device, be careful to avoid damaging or tearing the home button flex cable that is connected from the underside of the display assembly to the logic board. Be sure to remove the home button flex cowl and disconnect the home button flex cable connector from the logic board using ESD-safe tweezers, before doing anything else inside. Refer to the service guide procedure titled 'Open Device' for complete instructions.2. Disconnect the group of flex cables connecting the display to the logic board.3. Examine each connector for any signs of damage or debris.4. If display flex connectors appear normal and not damaged, reconnect this group of flex cables, gently reseating each connector carefully and completely with light finger pressure, using two fingers if possible.5. If any display flex cable appears abnormal or damaged, answer “No” to the question below.6. Reassemble by installing any removed components and closing the device. Caution: Before closing the display, verify that the home button flex cable connector is securely connected to the logic board, and that the home button flex cowl has been reattached, using ESD-safe tweezers. Refer to the service guide procedure titled 'Open Device' for complete instructions.7. Retest device display.	Yes	Issue resolved by reseating internal display flex cables.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 7.	`\${nodeText.noSymptomCode}`	
Did this resolve the issue?					

	Check	Result	Action	Code	Commodity
7.	<p>Determine if the issue is caused by the device exhibiting any of the following symptoms:</p> <p>Blank/Black Screen: Device has power and is recognized by iTunes, but display remains black or is completely white.</p> <p>or</p>	Image Quality	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B54	IPHONE
	<p>Image Quality: Distorted video, rainbow effect, poor image quality, non-uniform color, bad contrast, brightness or backlight issues, light bleed, horizontal or vertical lines or blocks, out of focus, or flickering.</p> <p>Does the device have image quality or blank/black screen issues?</p>	Blank/Black Screen	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B5H	IPHONE

Ambient Light Sensor Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">Display does not adjust to varying light environments with auto-brightness on.	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">Clean the display with a clean microfiber cloth. Important: Do not use liquids, sprays, or abrasives to clean the device.Rule out environmental causes by checking and removing protective films and cases.On the device, go to Settings > General > Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging device into iTunes.Try rotating the device to confirm if the issue is caused by media, software, or the display.Go to Settings > Display & Brightness and turn Auto-Brightness off then on again. Recheck the user's device to see if this resolved the issue. Refer to HT202613: Adjust the display settings on your iPhone, iPad, or iPod touch for more information about changing Brightness settings.Restart the device. If unable to restart, attempt to reset the device.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 3.	\$(nodeText.yesSymptomCode)	
	<p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Is the device in warranty and eligible for warranty service?</p>	No	Go to step 2.	\$(nodeText.noSymptomCode)	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).	Yes	Go to step 3.	\$(nodeText.yesSymptomCode)	
	<p>Is the device eligible for out-of-warranty service?</p>	No	Return device to user. Due to damage, the device is no longer eligible for support.	\$(nodeText.noSymptomCode)	

	Check	Result	Action	Code	Commodity
3.	Run AST 2 MRI on user's device.	Yes	Go to step 4.	`\${nodeText.yesSymptomCode}`	
	<p>Check diagnostic results to verify the presence of ambient light sensor (ALS) sensor hardware.</p> <p>Note: You may need to update the user's device to the latest OS to run this test. Do not restore the user's device before running AST 2.</p> <p>Warning: Verify user has a backup or has given consent before proceeding.</p> <p>If AST 2 is not available, follow the steps listed in TP1045: Functional Test to test ambient light sensor functionality.</p> <p>Does MRI detect the the ambient light sensor (ALS)?</p>	No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B54	IPHONE
4.	<p>Follow steps listed in TP1045: Functional Test to test ambient light sensor functionality.</p> <p>Did the display respond as expected?</p>	Yes	Issue cannot be duplicated. Remind user that protective films and cases can prevent the ambient light sensor from responding properly.	`\${nodeText.yesSymptomCode}`	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B54	IPHONE

Burnt Smell / Odor

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">Unusual burnt smell or odor	<p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">Disconnect all accessories from the device.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Determine whether issue involves a safety risk, such as fumes, excessive heat, or shock. Do not perform procedures that can be a safety risk to you or the user. Can you proceed safely?	Yes	Go to step 2.	\$(nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options. Escalate using safety procedures if user claims injury.	B0M	IPHONE
2.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility. Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service. Is the device in warranty and eligible for warranty service?	Yes	Go to step 4.	\$(nodeText.yesSymptomCode}	
		No	Go to step 3.	\$(nodeText.noSymptomCode}	
3.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI). Is the device eligible for out-of-warranty service?	Yes	Go to step 4.	\$(nodeText.yesSymptomCode}	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	\$(nodeText.noSymptomCode}	

	Check	Result	Action	Code	Commodity
4.	Determine source of odor.	Device	Go to step 5.	\${nodeText.yesSymptomCode}	
	Is the odor coming from the device or an accessory?	Accessory	Go to step 6.	\${nodeText.noSymptomCode}	
5.	Test to determine whether the device turns on and functions.	Yes	ESCALATION REQUIRED. Contact ACS for additional support.	B0M	
	Does the device turn on and function?	No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0M	IPHONE
6.	Advise user to discontinue use of the accessory.	Apple	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B09	IPHONE ACCESSORY
	Is the accessory made by Apple or a third party?	Third Party	Refer user to accessory manufacturer for support.	\${nodeText.noSymptomCode}	

Button Issue

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">Sleep/Wake button not workingRing/Silent switch not workingVolume up/down buttons not workingHome button not working	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">Restart device. If unable to restart, try to reset device.On the device, go to Settings > General > Software Update to verify device has most up-to-date software. If unavailable, verify by plugging device into iTunes. <p>Note: If the user's issue is specific to Home button Touch ID functionality, please back up and select “Touch ID Issues” from the GSX troubleshooting menu. This procedure is intended for button press issues only.</p>

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 2.	`\${nodeText.yesSymptomCode}`	
	<p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Is the device in warranty and eligible for warranty service?</p>	No	Go to step 3.	`\${nodeText.noSymptomCode}`	
2.	Closely inspect the area around all buttons and switches on the user's device. If you can see any damage or debris in or around any button or switch, then answer “Yes” to the question below.	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	<p>If the button/switch is either stuck or can not be pressed or toggled, then check for the following:</p> <ul style="list-style-type: none">Substance causing button/switch to be stuck in one positionDebris blocking button/switch so you cannot press or toggle button/switchPhysically broken button/switch <p>Is button/switch stuck, blocked by debris, or physically broken?</p>	No	Go to step 4.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
3.	<p>Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).</p> <p>Is the device eligible for out-of-warranty service?</p>	Yes	Go to step 4.	#{nodeText.yesSymptomCode}	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	#{nodeText.noSymptomCode}	
4.	<p>Isolate the button/switch issue to one of the following groups:</p> <ul style="list-style-type: none"> • A - Home button • B - Sleep/Wake button, Ring/Silent switch, volume buttons <p>Which button/switch group is affected?</p>	A	Go to step 11.	#{nodeText.yesSymptomCode}	
		B	Go to step 5.	#{nodeText.noSymptomCode}	
5.	<p>Run the Sleep/Wake button diagnostic in AST 2. This test verifies Sleep/Wake button functionality.</p> <p>Check diagnostic results to verify Sleep/Wake button response.</p> <p>Note: You may need to update the user's device to the latest OS to run this test. Do not restore the user's device before running AST 2.</p> <p>If AST 2 is unavailable, then follow steps listed in TP1045: Functional Test to test Sleep/Wake button functionality.</p> <p>Is Sleep/Wake button responding as expected?</p>	Yes	Go to step 9.	#{nodeText.yesSymptomCode}	
		No	Go to step 6.	#{nodeText.noSymptomCode}	
6.	<p>Run the Ring/Silent switch diagnostic in AST 2. This test verifies Ring/Silent switch functionality.</p> <p>Check diagnostic results to verify Ring/Silent switch response.</p> <p>If AST 2 is unavailable, then follow steps listed in TP1045: Functional Test to test Ring/Silent switch functionality.</p> <p>Is Ring/Silent switch responding as expected?</p>	Yes	Go to step 12.	#{nodeText.yesSymptomCode}	
		No	Go to step 7.	#{nodeText.noSymptomCode}	

	Check	Result	Action	Code	Commodity
7.	<p>Run the volume button diagnostic in AST 2. This test verifies the functionality of the volume up and volume down buttons.</p> <p>Check diagnostic results to verify volume button response.</p> <p>If AST 2 is unavailable, then follow steps listed in TP1045: Functional Test to test volume button functionality.</p> <p>Are volume up/down buttons responding as expected?</p>	Yes	Go to step 12.	#{nodeText.yesSymptomCode}	
		No	Go to step 8.	#{nodeText.noSymptomCode}	
8.	<p>Open device. Carefully lift Sleep/Wake button flex cable.</p> <p>Using magnification, inspect for any films or foreign material underneath connector blocking access to pins.</p> <p>Is there a film or foreign material blocking connection?</p>	Yes	Reassemble and return device to customer. Due to unauthorized modification device is not eligible for service.	#{nodeText.yesSymptomCode}	
		No	Go to step 12.	#{nodeText.noSymptomCode}	
9.	<p>Run the Ring/Silent switch diagnostic in AST 2. This test verifies Ring/Silent switch functionality.</p> <p>Check diagnostic results to verify Ring/Silent switch response.</p> <p>If AST 2 is unavailable, then follow steps listed in TP1045: Functional Test to test Ring/Silent switch functionality.</p> <p>Is Ring/Silent switch responding as expected?</p>	Yes	Go to step 10.	#{nodeText.yesSymptomCode}	
		No	Go to step 12.	#{nodeText.noSymptomCode}	

	Check	Result	Action	Code	Commodity
10.	Run the volume button diagnostic in AST 2. This test verifies the functionality of the volume up and volume down buttons.	Yes	Issue cannot be duplicated.	\$(nodeText.yesSymptomCode)	
	<p>Check diagnostic results to verify volume button response.</p> <p>If AST 2 is unavailable, then follow steps listed in TP1045: Functional Test to test volume button functionality.</p> <p>Are volume up/down buttons responding as expected?</p>	No	Go to step 12.	\$(nodeText.noSymptomCode)	
11.	Run the Home button diagnostic in AST 2. This test verifies Home button functionality.	Yes	Issue cannot be duplicated.	\$(nodeText.yesSymptomCode)	
	<p>Check diagnostic results to verify Home button response.</p> <p>Note: You may need to update the user's device to the latest OS to run this test. Do not restore the user's device before running AST 2.</p> <p>If AST 2 is unavailable, then follow steps listed in TP1045: Functional Test to test Home button functionality.</p> <p>Is Home button responding as expected?</p>	No	Go to step 12.	\$(nodeText.noSymptomCode)	
12.	Go to Settings > General > Reset > Erase All Content and Settings.	Yes	Issue resolved by erasing all content and settings.	\$(nodeText.yesSymptomCode)	
	<p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Is the button issue resolved?</p>	No	Go to step 13.	\$(nodeText.noSymptomCode)	
13.	Follow the steps listed in article HT201252: Restore your iPhone, iPad or iPod touch to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore .	Yes	Go to step 15.	\$(nodeText.yesSymptomCode)	
	<p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did restore complete?</p>	No	Go to step 14.	\$(nodeText.noSymptomCode)	

	Check	Result	Action	Code	Commodity
14.	<p>Perform the steps listed in articles HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod and HT204770: Get help with iOS update and restore errors to attempt to restore the device.</p> <p>Did restore complete?</p>	Yes	Go to step 15.	\${nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0J	IPHONE
15.	<p>Run the Sleep/Wake button diagnostic in AST 2. This test verifies Sleep/Wake button functionality.</p> <p>Check diagnostic results to verify Sleep/Wake button response.</p> <p>If AST 2 is unavailable, then follow steps listed in TP1045: Functional Test to test Sleep/Wake button functionality.</p> <p>Is Sleep/Wake button responding as expected?</p>	Yes	Go to step 16.	\${nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B38	IPHONE
16.	<p>Run the Ring/Silent switch diagnostic in AST 2. This test verifies Ring/Silent switch functionality.</p> <p>Check diagnostic results to verify Ring/Silent switch response.</p> <p>If AST 2 is unavailable, then follow steps listed in TP1045: Functional Test to test Ring/Silent switch functionality.</p> <p>Is Ring/Silent switch responding as expected?</p>	Yes	Go to step 17.	\${nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B37	IPHONE

	Check	Result	Action	Code	Commodity
17.	<p>Run the volume button diagnostic in AST 2. This test verifies the functionality of the volume up and volume down buttons.</p> <p>Check diagnostic results to verify volume button response.</p> <p>If AST 2 is unavailable, then follow steps listed in TP1045: Functional Test to test volume button functionality.</p> <p>Are volume up/down buttons responding as expected?</p>	Yes	Go to step 18.	`\${nodeText.yesSymptomCode}`	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B39	IPHONE
18.	<p>Run the Home button diagnostic in AST 2. This test verifies Home button functionality.</p> <p>Check diagnostic results to verify Home button response.</p> <p>If AST 2 is unavailable, then follow steps listed in TP1045: Functional Test to test Home button functionality.</p> <p>Is Home button responding as expected?</p>	Yes	Issue resolved by restoring iOS.	`\${nodeText.yesSymptomCode}`	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B36	IPHONE

Camera Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">• Camera app is missing<ul style="list-style-type: none">◦ Description: Camera app is not present on user's device• Camera not functioning<ul style="list-style-type: none">◦ Description:<ul style="list-style-type: none">▪ Cannot take photos▪ Cannot record video▪ Camera LED flash not working▪ No preview visible in Camera app▪ Camera app crashes▪ Cannot switch between iSight (rear) camera and FaceTime (front) camera• Photo or video image quality from one or both cameras is not as expected<ul style="list-style-type: none">◦ Description:<ul style="list-style-type: none">▪ Photos or videos are blurry or fuzzy▪ Photos or videos are too dark or too light▪ Photos or videos contain colored lines and/or bands▪ Photos or videos contain spots▪ Photos or videos contain incorrect color balance▪ Camera image has a flare, haze, or spot near the edge▪ Images taken with the camera have brightly colored "scratches"	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">1. Verify case or protective film is not obstructing camera or flash.2. On the device, go to Settings > General > Software Update to verify device has most up-to-date software. If unavailable, verify by plugging device into iTunes.3. If the Camera app is missing, verify Camera has not been restricted in Settings > General > Restrictions. The user would need to enter their password to disable the restriction. The Camera app can also be restricted by configuration profiles. Check Settings > General > Device Management to verify a configuration profile is not preventing use of the camera.4. Take a photo of the iPhone Camera Test Image with both cameras (front FaceTime camera and rear iSight camera). Inspect the photos to verify image quality for each camera.5. When taking a photo or starting a video recording, the device should play a shutter sound effect. The sound is not played if the Ring/Silent switch is set to silent. If the user's issue is that the camera is not making sound, check that the Ring/Silent switch is set for ring and not silent. Note: In some regions, the sound effects for Camera are played even if the Ring/Silent switch is set to silent.6. Set LED flash mode. In the Camera app, tap the flash button in the upper left corner of the screen, then tap Off, Auto, or On.7. Turn on the flashlight in Control Center. This should turn on the flash LED.8. Take a photo with LED flash mode set to On. This should turn on the flash LED.9. Refer to article HT203692: If you see a flare, haze, or spot near the edge of your photo or video to determine if the user's issue involves these symptoms. If so, then this may be expected behavior and is not a service issue.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	<p>Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.</p> <p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Is the device in warranty and eligible for warranty service?</p>	Yes	Go to step 3.	#{nodeText.yesSymptomCode}	
		No	Go to step 2.	#{nodeText.noSymptomCode}	
2.	<p>Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).</p> <p>Is the device eligible for out-of-warranty service?</p>	Yes	Go to step 3.	#{nodeText.yesSymptomCode}	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	#{nodeText.noSymptomCode}	
3.	<p>Verify that the user's device has one of the following specific issues:</p> <ul style="list-style-type: none"> No preview visible in Camera app Camera app crashes Cannot switch between iSight (rear) camera and FaceTime (front) camera <p>Does the user's device exhibit any of the above listed symptoms?</p>	Yes	Go to step 4.	#{nodeText.yesSymptomCode}	
		No	Go to step 9.	#{nodeText.noSymptomCode}	
4.	<p>Determine if the device has any physical damage that makes this component repair impossible.</p> <p>Is the device eligible for a component repair?</p>	Yes	Go to step 5.	#{nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0A	IPHONE

	Check	Result	Action	Code	Commodity
5.	<p>Note: You should refer to the specific take-apart procedure for your device model for instructions to perform the following take-apart and reassembly steps:</p> <ol style="list-style-type: none"> 1. Open device. Caution: When opening the device, be careful to avoid damaging or tearing the home button flex cable that is connected from the underside of the display assembly to the logic board. Be sure to remove the home button flex cowling and disconnect the home button flex cable connector from the logic board using ESD-safe tweezers, before doing anything else inside. Refer to the service guide procedure titled 'Open Device' for complete instructions. 2. Remove the cowling on the upper right-hand side of the device. 3. Disconnect the iSight (rear) camera flex cable and closely examine the flex cable and its connector. Also closely examine the iSight camera connector on the logic board. 	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0A	IPHONE
	Does the camera flex cable or either connector appear intentionally damaged?	No	Go to step 6.	`\${nodeText.noSymptomCode}`	
6.	Gently reconnect the camera flex cable by carefully reseating the connector completely with light finger pressure. Use two fingers if possible.	Yes	Issue resolved by reseating camera flex cable.	`\${nodeText.yesSymptomCode}`	
	Reassemble by installing any removed components and closing the device. Caution: Before closing the display, verify that the home button flex cable connector is securely connected to the logic board, and that the home button flex cowling has been reattached, using ESD-safe tweezers. Refer to the service guide procedure titled 'Open Device' for complete instructions.	No	Go to step 7.	`\${nodeText.noSymptomCode}`	
	Follow steps listed in TP1045: Functional Test to retest iSight camera functionality.				
	After reseating the camera flex cable, is the iSight camera working as expected?				

	Check	Result	Action	Code	Commodity
7.	<p>To completely troubleshoot this issue, a known-good iSight (rear) camera assembly is required.</p> <p>Do you have immediate access to a known-good iSight (rear) camera assembly?</p>	Yes	Go to step 8.	\${nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0A	IPHONE
8.	<p>Follow Service Guide instructions to open the user's device and remove the iSight (rear) camera assembly.</p> <p>Temporarily substitute the known-good iSight (rear) camera assembly in the user's device.</p> <p>Follow steps listed in TP1045: Functional Test to retest both cameras' functionality, to determine if this resolves these specific symptoms:</p> <ul style="list-style-type: none"> No preview visible in Camera app Camera app crashes Cannot switch between iSight (rear) camera and FaceTime (front) camera <p>Does the known-good camera assembly resolve these symptoms?</p>	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0A	IPHONE COMP CAMERA
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0N	IPHONE

	Check	Result	Action	Code	Commodity
9.	<p>Follow steps listed in TP1045: Functional Test to test functionality of both cameras.</p> <p>If available, then run AST 2 MRI on user's device.</p> <p>Check diagnostic results to verify the presence of front and rear camera hardware.</p> <p>Note: You may need to update the user's device to the latest OS to run this test. Do not restore the user's device before running AST 2.</p> <p>Warning: Verify user has a backup or has given consent before proceeding.</p> <p>Determine which camera is affected:</p> <ul style="list-style-type: none"> • FaceTime (front) camera • iSight (rear) camera <p>Is the issue related to FaceTime or iSight camera?</p>	FaceTime	Go to step 10.	`\${nodeText.yesSymptomCode}`	
		iSight	Go to step 16.	`\${nodeText.noSymptomCode}`	
10.	<p>Verify that the FaceTime camera has one of the following specific issues:</p> <p>Image quality:</p> <ul style="list-style-type: none"> • Photos or videos are blurry or fuzzy • Photos or videos are too dark or too light • Photos or videos contain colored lines and/or bands • Photos or videos contain spots • Photos or videos contain incorrect color balance • Images taken with the camera have brightly colored "scratches" <p>Not functioning:</p> <ul style="list-style-type: none"> • Cannot take photos • Cannot record video • Camera hardware not detected in AST 2 MRI <p>Does the camera have image quality issues or is the camera not functioning?</p>	Not Functioning	Go to step 11.	`\${nodeText.yesSymptomCode}`	
		Image Quality	Go to step 14.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
11.	<p>Follow the steps listed in article HT201252: Use iTunes on your Mac or PC to restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did restore complete?</p>	Yes	Go to step 13.	\$_{nodeText.yesSymptomCode}	
		No	Go to step 12.	\$_{nodeText.noSymptomCode}	
12.	<p>Perform the steps listed in articles HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod and HT204770: Get help with iOS update and restore errors to attempt to restore the device.</p> <p>Did restore complete?</p>	Yes	Go to step 13.	\$_{nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0J	IPHONE
13.	<p>Follow the steps listed in TP1045: Functional Test to retest FaceTime camera functionality.</p> <p>If available, then run AST 2 MRI on user's device.</p> <p>Check diagnostic results to verify the presence of front and rear camera hardware.</p> <p>Is the camera functioning after restoring the device?</p>	Yes	Issue resolved by restoring iOS.	\$_{nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0N	IPHONE

	Check	Result	Action	Code	Commodity
14.	<p>Verify that the user's device has the following specific issue:</p> <ul style="list-style-type: none"> Images taken with the FaceTime camera have brightly colored "scratches" due to a laser beam contacting and damaging the camera sensor. <p>Damage can be viewed in an image taken with the camera.</p> <p>Note: Damage may not be seen in the camera preview.</p>	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0N	IPHONE
	<p>Take a photo of the iPhone Camera Test Image with the FaceTime camera. Inspect the photo to locate the damage.</p>	No	Go to step 15.	\${nodeText.noSymptomCode}	
	Does the user's device exhibit this specific symptom?				
15.	<p>Clean the glass around the FaceTime camera with a microfiber cloth.</p> <p>Follow steps listed in TP1045: Functional Test to retest FaceTime camera functionality.</p> <p>Is the camera image quality issue resolved?</p>	Yes	Issue resolved by cleaning the device.	\${nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0N	IPHONE

	Check	Result	Action	Code	Commodity
16.	<p>Verify that the iSight camera has one of the following specific issues:</p> <p>Image quality:</p> <ul style="list-style-type: none"> • Photos or videos are blurry or fuzzy • Photos or videos are too dark or too light • Photos or videos contain colored lines and/or bands • Photos or videos contain spots • Photos or videos contain incorrect color balance • Images taken with the camera have brightly colored “scratches” <p>Not functioning:</p> <ul style="list-style-type: none"> • Cannot take photos • Cannot record video • Camera LED flash not working • Camera hardware not detected in AST 2 MRI <p>Does the camera have image quality issues or is the camera not functioning?</p>	Image Quality	Go to step 23.	\${nodeText.yesSymptomCode}	
		Not Functioning	Go to step 17.	\${nodeText.noSymptomCode}	
17.	<p>Determine whether the camera or flash is not functioning.</p> <p>Is the camera or flash failing?</p>	Camera	Go to step 18.	\${nodeText.yesSymptomCode}	
		Flash	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B5C	IPHONE

	Check	Result	Action	Code	Commodity
18.	<p>Note: You should refer to the specific take-apart procedure for your device model for instructions to perform the following take-apart and reassembly steps:</p> <ol style="list-style-type: none"> 1. Open device. Caution: When opening the device, be careful to avoid damaging or tearing the home button flex cable that is connected from the underside of the display assembly to the logic board. Be sure to remove the home button flex cowling and disconnect the home button flex cable connector from the logic board using ESD-safe tweezers, before doing anything else inside. Refer to the service guide procedure titled 'Open Device' for complete instructions. 2. Remove the cowling on the upper right-hand side of the device. 3. Disconnect the iSight (rear) camera flex cable and closely examine the flex cable and its connector. Also closely examine the iSight camera connector on the logic board. <p>Does the camera flex cable or either connector appear intentionally damaged?</p>	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0A	IPHONE
		No	Go to step 19.	\$(nodeText.noSymptomCode)	
19.	<p>Gently reconnect the camera flex cable by carefully reseating the connector completely with light finger pressure. Use two fingers if possible.</p> <p>Reassemble by installing any removed components and closing the device. Caution: Before closing the display, verify that the home button flex cable connector is securely connected to the logic board, and that the home button flex cowling has been reattached, using ESD-safe tweezers. Refer to the service guide procedure titled 'Open Device' for complete instructions.</p> <p>Follow steps listed in TP1045: Functional Test to retest iSight camera functionality.</p> <p>If available, then run AST 2 MRI on user's device.</p> <p>Check diagnostic results to verify the presence of front and rear camera hardware.</p> <p>After reseating the camera flex cable, is the iSight camera working as expected?</p>	Yes	Issue resolved by reseating camera flex cable.	\$(nodeText.yesSymptomCode)	
		No	Go to step 20.	\$(nodeText.noSymptomCode)	

	Check	Result	Action	Code	Commodity
20.	<p>Follow the steps listed in article HT201252: Use iTunes on your Mac or PC to restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did restore complete?</p>	Yes	Go to step 22.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 21.	`\${nodeText.noSymptomCode}`	
21.	<p>Perform the steps listed in articles HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod and HT204770: Get help with iOS update and restore errors to attempt to restore the device.</p> <p>Did restore complete?</p>	Yes	Go to step 22.	`\${nodeText.yesSymptomCode}`	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0J	IPHONE
22.	<p>Follow the steps listed in TP1045: Functional Test to retest FaceTime camera functionality.</p> <p>If available, then run AST 2 MRI on user's device.</p> <p>Check diagnostic results to verify the presence of front and rear camera hardware.</p> <p>Is the camera functioning after restoring the device?</p>	Yes	Issue resolved by restoring iOS.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 26.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
	Verify that the user's device has the following specific issue:	Yes	Go to step 24.	`\${nodeText.yesSymptomCode}`	
	<ul style="list-style-type: none"> Images taken with the iSight camera have brightly colored "scratches" due to a laser beam contacting and damaging the camera sensor. <p>Damage can be viewed in an image taken with the camera.</p> <p>Note: Damage may not be seen in the camera preview.</p>				
23.	Take a photo of the iPhone Camera Test Image with the iSight camera. Inspect the photo to locate the damage.	No	Go to step 25.	`\${nodeText.noSymptomCode}`	
	Does the user's device exhibit this specific symptom?				
24.	Determine if the device has any physical damage that makes this component repair impossible.	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0A	IPHONE COMP CAMERA
	Is the device eligible for a component repair?	No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0A	IPHONE

	Check	Result	Action	Code	Commodity
25.	<p>Using a microfiber cloth, clean the iSight camera lens.</p> <p>Follow steps listed in TP1045: Functional Test to retest iSight camera functionality.</p> <p>Is the camera image quality issue resolved?</p>	Yes	Issue resolved by cleaning the device.	\${nodeText.yesSymptomCode}	
		No	Go to step 26.	\${nodeText.noSymptomCode}	
26.	<p>Determine if the device has any physical damage that makes this component repair impossible.</p> <p>Is the device eligible for a component repair?</p>	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0A	IPHONE COMP CAMERA
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0A	

Display Clicking

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">The device makes a creaking or clicking sound when the display is pressed near the edges of the device.	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">Confirm the symptom: Verify the user's device makes a creaking or clicking sound when the display is pressed near the edges.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	<p>Important: Damage that is described in the green section of the VMI is the only damage that is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Also refer to article HT204695: Handling a mixed-failure repair if appropriate.</p> <p>Is the device in warranty and eligible for warranty service?</p>	No	Go to step 2.	`\${nodeText.noSymptomCode}`	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	<p>Is the device eligible for out-of-warranty service?</p>	No	Return the device to the user. Due to damage, the device is no longer eligible for support.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
3.	<p>Follow the Service Guide steps to open the user's device and place it in the repair tray with the display rotated out of the way.</p> <p>Can you successfully open the device?</p>	Yes	Go to step 4.	\${nodeText.yesSymptomCode}	
		No	Whole unit service required out of warranty. Proceed with repair creation to see available options. Check for in-warranty repair options such as AppleCare+.	B95	IPHONE
4.	<p>Inspect for any obstructions that may prevent the display from seating properly in the enclosure.</p> <p>Are there any obstructions that may prevent the display from seating properly in the enclosure?</p>	Yes	Whole unit service required. Proceed with repair creation to see available options. Covered if under warranty. Check for out-of-warranty repair options.	B5L	IPHONE
		No	Go to step 5.	\${nodeText.noSymptomCode}	
5.	<p>Follow the Service Guide steps to reseal and reinstall the display into the enclosure.</p> <p>While rotating the display back down, reseal the hooks on the top of the display module into the slots in the back enclosure. The display module will need to be pushed toward the top as it is lowered into place.</p> <p>Note: Check to make sure the Touch ID / Home Button Flex cable is properly connected before closing.</p> <p>Press down firmly around the edges of the display module and inspect the offset between the back housing and the display module.</p> <p>Be careful of the flexible circuits at the top of the display module that connect to the rest of the device.</p> <p>Reinstall and tighten the security screws.</p> <p>Are you able to successfully reseal and reinstall the display module into the enclosure?</p>	Yes	Go to step 6.	\${nodeText.yesSymptomCode}	
		No	Whole unit service required. Proceed with repair creation to see available options. Covered if under warranty. Check for out-of-warranty repair options.	B5L	IPHONE

	Check	Result	Action	Code	Commodity
6.	Retest by checking for a creaking or clicking sound when the display is pressed near the edges of the device. Is the issue resolved?	Yes	The issue was resolved by reseating the display in the enclosure.	\${nodeText.yesSymptomCode}	
		No	Whole unit service required. Proceed with repair creation to see available options. Covered if under warranty. Check for out-of-warranty repair options.	B5L	IPHONE

Proximity Sensor Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">Screen stays on during a call when iPhone is lifted to ear.Screen immediately turns off when making a call.	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">Clean display with a clean microfiber cloth. Important: Do not use liquids, sprays, or abrasives to clean the device.Rule out environmental causes by checking and removing protective films and cases.On the device, go to Settings > General > Software Update to verify device has most up-to-date software. If unavailable, verify by plugging device into iTunes.Quit any background apps.Restart device. If unable to restart, try to reset device.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	<p>Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.</p> <p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Is the device in warranty and eligible for warranty service?</p>	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 2.	`\${nodeText.noSymptomCode}`	
2.	<p>Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).</p> <p>Is the device eligible for out-of-warranty service?</p>	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	`\${nodeText.noSymptomCode}`	
3.	<p>Follow steps listed in TP1045: Functional Test to test proximity sensor functionality.</p> <p>Did the display respond as expected?</p>	Yes	Issue resolved. Remind user that protective films and cases can prevent proximity sensor from responding properly.	`\${nodeText.yesSymptomCode}`	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B54	IPHONE

Temperature Alert

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">• User claims device or AC adapter becomes unusually warm during use• Temperature alert message appears• Battery charging is disabled• Display brightness dims• Apps close• Device turns off	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">1. When using the device or charging the battery, it is normal for the device to get warm. The exterior of the device functions as a cooling surface that transfers heat from inside the device to the cooler air outside.2. Refer to article HT201678: Keeping iPhone, iPad, and iPod touch within acceptable operating temperatures.3. Remove any covers or cases from the device.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Allow device to cool down. The device will follow these automated steps before returning to full function.	Yes	Issue resolved.	\$(nodeText.yesSymptomCode)	
	<ul style="list-style-type: none">• Battery charging is disabled.• Display brightness dims.• Cellular transmission power is reduced.• Apps close, phone calls end, a temperature alert message appears.• Device turns off. <p>After the device has had a chance to cool, has it returned to normal operation?</p>	No	Go to step 2.	\$(nodeText.noSymptomCode)	
2.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 4.	\$(nodeText.yesSymptomCode)	
	<p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Is the device in warranty and eligible for warranty service?</p>	No	Go to step 3.	\$(nodeText.noSymptomCode)	

	Check	Result	Action	Code	Commodity
3.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).	Yes	Go to step 4.	\$(nodeText.yesSymptomCode}	
	Is the device eligible for out-of-warranty service?	No	Return device to user. Due to damage, the device is no longer eligible for support.	\$(nodeText.noSymptomCode}	
4.	Run AST 2 MRI on user's device.	Yes	Go to step 5.	\$(nodeText.yesSymptomCode}	
	Check diagnostic results to verify the presence of multiple temperature warnings. Note: You may need to update the user's device to the latest OS to run this test. Do not restore the user's device before running AST 2. Warning: Verify user has a backup or has given consent before proceeding. Has the device experienced multiple warnings?	No	Issue cannot be duplicated. Refer user to article HT201678: Keeping iPhone, iPad, and iPod touch within acceptable operating temperatures.	\$(nodeText.noSymptomCode}	
5.	Follow steps listed in article HT201252: Restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore .	Yes	Go to step 7.	\$(nodeText.yesSymptomCode}	
	Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding. Did restore complete?	No	Go to step 6.	\$(nodeText.noSymptomCode}	
6.	Perform steps listed in articles HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod and HT204770: Get help with iOS update and restore errors to attempt to restore the device.	Yes	Go to step 7.	\$(nodeText.yesSymptomCode}	
	Did restore complete?	No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0J	IPHONE

	Check	Result	Action	Code	Commodity
7.	<p>Advise user to set up the device as a new device, following instructions in article HT204686: Erase your iPhone, iPad, iPod touch, or Apple Watch.</p> <p>Attempt to reproduce the temperature warning screen by launching and using a high-bandwidth or graphical application.</p>	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0M	IPHONE
	Can you reproduce the temperature warning?	No	Issue resolved by restoring iOS.	\${nodeText.noSymptomCode}	

Touch ID Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">• Unable to read user's fingerprint• Unable to register a user's finger in Touch ID in settings• Unable to make a purchase via iTunes	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <p>Note: If user's issue is specific to the Home button not responding when pressed, return to the list of symptoms and choose “ Button or Switch Issues” from the troubleshooting menu. This procedure is intended for Touch ID issues only.</p> <ol style="list-style-type: none">1. Restart the device. After starting up, the user's device will first prompt for a passcode, not a fingerprint, even if Touch ID is enabled. This is normal behavior. The only time the device will authenticate via Touch ID is when waking from sleep, not when starting up.2. On the device, have the user go to Settings > Touch ID & Passcode to verify user has enrolled at least one fingerprint first, before performing further troubleshooting. If no fingerprint is enrolled, Touch ID will be unable to function as expected.3. Also in Settings > Touch ID & Passcode, verify that iPhone Unlock is set to On. If this is set to Off then Touch ID will not unlock the device. Verify that iTunes & App Store is set to On. If this is set to Off then Touch ID cannot be used to make purchases in the iTunes Store, App Store, and iBooks Store. Refer to HT201371: Use Touch ID on iPhone and iPad for more information about these settings.4. Ensure that the customer's finger and the Touch ID sensor are clean. Check for dirt, debris, oils, lotions, or signs of damage. If necessary, clean the ring area surrounding the Home button on the user's device using a clean microfiber cloth.5. Check for cases or protective films. Remove them if they are obstructing the Home button or the ring around the Home button and then retest for Touch ID functionality.6. Have the user try to enroll another fingerprint to his/her own device.7. Remember that the user needs to slightly move his/her fingers during enrollment. Also, ensure that the user waits for the device to prompt them to lift their finger before doing so.8. If user's finger does not reliably work on their device, try enrolling the user's fingerprint on another known-good device.9. Enroll your own finger with the user's device and retest for Touch ID functionality. Be sure to remove any non-user fingerprints from the device when testing is complete, so that you do not inadvertently leave your biometric information on a user's device.10. If the user cannot enroll a fingerprint in the iOS Setup Assistant, try these additional steps:<ul style="list-style-type: none">• Restart the device.• Skip the Touch ID enrollment in the iOS Setup Assistant.• Complete the iOS Setup Assistant, and then enable Airplane Mode.

	<ul style="list-style-type: none"> Try to enroll the fingerprint using Settings > Touch ID & Passcode.
	<p>11. Do not service or replace the device for issues with a specific finger or fingers. If the user has an issue with certain fingers, explain that in some cases Touch ID may be unable to match those fingers consistently. This is usually caused by the readability of that fingerprint, and the user can either try enrolling the fingerprint at a later time, or use a different finger for Touch ID. If you and the user are unable to enroll any fingerprints on the device, there is an issue with the Touch ID sensor and the device should be serviced.</p> <p>12. Refer to HT201371: Use Touch ID on iPhone and iPad for more information about setting up and using Touch ID. Refer to TP1062: Touch ID for more information about troubleshooting Touch ID issues.</p>

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 3.	\$(nodeText.yesSymptomCode)	
	<p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Also refer to HT204695: Handling a mixed-failure repair if appropriate.</p> <p>Is the device in warranty and eligible for warranty service?</p>	No	Go to step 2.	\$(nodeText.noSymptomCode)	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).	Yes	Go to step 3.	\$(nodeText.yesSymptomCode)	
	<p>Is the device eligible for out-of-warranty service?</p>	No	Return device to user. Due to damage, the device is no longer eligible for support.	\$(nodeText.noSymptomCode)	

	Check	Result	Action	Code	Commodity
3.	Run AST 2 MRI on user's device.	Yes	Go to step 4.	\$(nodeText.yesSymptomCode)	
	<p>Check diagnostic results to verify the presence of Touch ID hardware.</p> <p>Note: You may need to update the user's device to the latest OS to run this test. Do not restore the user's device before running AST 2.</p> <p>Warning: Verify user has a backup or has given consent before proceeding.</p> <p>If AST 2 is not available, follow steps listed in TP1045: Functional Test to test Touch ID functionality.</p> <p>Does MRI detect Touch ID?</p>	No	Go to step 5.	\$(nodeText.noSymptomCode)	
4.	Repeat Quick Check steps to verify Touch ID functionality.	Yes	Issue cannot be duplicated.	\$(nodeText.yesSymptomCode)	
	<p>Touch ID is not responding as expected if:</p> <ul style="list-style-type: none"> There are authentication errors or failures on the user's device when attempting to use any finger. Multiple people are having problems enrolling any fingerprint. Registration process cannot begin because the device cannot detect any finger. <p>Is Touch ID responding as expected?</p>	No	Go to step 5.	\$(nodeText.noSymptomCode)	
5.	<p>Isolate the Touch ID issue to one of the following symptoms:</p> <ul style="list-style-type: none"> No response to finger Intermittent response to finger <p>Which issue affects Touch ID?</p>	No Response	<p>Whole unit service required. Proceed with repair creation to see available options. Covered if under warranty. Check for out-of-warranty repair options.</p> <p>Note: Do not restore software. Use "Erase All Contents and Settings" instead.</p>	B35	IPHONE
		Intermittent Response	Go to step 6.	\$(nodeText.noSymptomCode)	

	Check	Result	Action	Code	Commodity
6.	<p>On the user's device, go to Settings > General > Software Update to verify that device has the most up-to-date software. If unavailable, verify by plugging device into iTunes.</p> <p>Update iOS on the user's device if necessary.</p> <p>Retest Touch ID after software update.</p> <p>Does Touch ID function after software update?</p>	Yes	Issue resolved by updating iOS.	`\${nodeText.yesSymptomCode}`	
		No	<p>Whole unit service required. Proceed with repair creation to see available options. Covered if under warranty. Check for out-of-warranty repair options.</p> <p>Note: Do not restore software. Use "Erase All Contents and Settings" instead.</p>	B35	IPHONE

Alert Messages on Device Screen or in iTunes

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">• “Use iTunes to Recover” window• Alert/error messages on the device• Alert/error message in iTunes	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">1. Read alert to determine the issue. Many alerts provide additional information or links to resolve the issue. Refer to article HT201210: Resolve iOS update and restore errors in iTunes and HT202778: About the 'Trust This Computer' alert on your iPhone, iPad, or iPod touch.2. Restart device. If unable to restart, try to reset device.3. On the device, go to Settings > General > Software Update to verify device has most up-to-date software. If unavailable, verify by plugging device into iTunes.4. Try Lightning connector in both orientations.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility. Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service. Also refer to HT204695: Handling a mixed-failure repair if appropriate. Is the device in warranty and eligible for warranty service?	Yes	Go to step 3.	\$(nodeText.yesSymptomCode)	
		No	Go to step 2.	\$(nodeText.noSymptomCode)	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI). Is the device eligible for out-of-warranty service?	Yes	Go to step 3.	\$(nodeText.yesSymptomCode)	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	\$(nodeText.noSymptomCode)	

	Check	Result	Action	Code	Commodity
3.	<p>Check that Lightning connector is not obstructed with lint or debris. Attempt to clean any debris in accordance with article TP320: iPhone, iPad, iPod: Cleaning Procedures.</p> <p>Are you able to clean the connector?</p>	Yes	Go to step 4.	\$(nodeText.yesSymptomCode)	
		No	Out-of-warranty replacement due to obstruction.	B91	IPHONE
4.	<p>Disconnect and reconnect the Lightning to USB cable to ensure a good connection to the user's device.</p> <p>Disconnect and reconnect the Lightning connector in both orientations.</p> <p>Retest to determine if alert message issue is resolved.</p> <p>Is the issue resolved?</p>	Yes	Issue resolved by cleaning.	\$(nodeText.yesSymptomCode)	
		No	Go to step 5.	\$(nodeText.noSymptomCode)	
5.	<p>Go to Settings > General > Reset > Erase All Content and Settings.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did this resolve the issue?</p>	Yes	Issue resolved.	\$(nodeText.yesSymptomCode)	
		No	Go to step 6.	\$(nodeText.noSymptomCode)	
6.	<p>Follow the steps listed in article HT201252: Use iTunes on your Mac or PC to restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did restore complete?</p>	Yes	Go to step 8.	\$(nodeText.yesSymptomCode)	
		No	Go to step 7.	\$(nodeText.noSymptomCode)	
7.	<p>Perform the steps listed in articles HT201210: Resolve iOS update and restore errors in iTunes and HT204770: Get help with iOS update and restore errors to attempt to restore the device.</p> <p>Did restore complete?</p>	Yes	Go to step 8.	\$(nodeText.yesSymptomCode)	
		No	Replace the whole unit. Covered if under warranty. Check for out-of-warranty repair options.	B0J	IPHONE

	Check	Result	Action	Code	Commodity
8.	<p>Retest to verify alert messages no longer appear on the user's device or in iTunes when device is connected.</p> <p>Is the issue resolved?</p>	Yes	Issue resolved.	`\${nodeText.yesSymptomCode}`	
		No	<p>ESCALATION REQUIRED.</p> <p>Contact ACS for additional support.</p> <p>Click the Help button in the GSX toolbar, then choose Troubleshooting > Technical Help with a Repair > Contact Apple.</p>	B0J	

App Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">App not functioning correctlyApp unexpectedly quits (returns to Home screen)App screen unexpectedly freezes (stops responding)	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">Restart the device.Verify that the app is compatible with the device.Launch App Store on device and tap “Updates” in bottom right corner. If any updates are available, tap “Update All” in upper right corner.On the device, go to Settings > General > Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.Remove and reinstall affected app. <p>Note: If multiple apps are having similar issues, go to Deep Dive.</p>

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	<p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Also refer to article HT204695: Handling a mixed-failure repair if appropriate.</p> <p>Is the device in warranty and eligible for warranty service?</p>	No	Go to step 2.	`\${nodeText.noSymptomCode}`	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	<p>Is the device eligible for out-of-warranty service?</p>	No	Return device to user. Due to damage, the device is no longer eligible for support.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
3.	<p>If available, run AST 2 MRI on user's device, use iOS Diagnostics if AST 2 is unavailable or unsupported.</p> <p>Use diagnostics to determine any apps that are unsupported on the device.</p> <p>Note: You may need to update the user's device to the latest OS to run this test. Do not restore the user's device before running AST 2.</p> <p>Warning: Verify user has a backup or has given consent before proceeding.</p> <p>Are there unsupported apps listed?</p>	Yes	Go to step 5.	\${nodeText.yesSymptomCode}	
		No	Go to step 4.	\${nodeText.noSymptomCode}	
4.	<p>Use diagnostics to determine any apps that are crashing, hanging, or causing memory issues that may be causing the app to unexpectedly stop responding or quit to the home screen.</p> <p>Are there crashing or hanging apps or memory issues listed?</p>	Yes	Go to step 5.	\${nodeText.yesSymptomCode}	
		No	Go to step 6.	\${nodeText.noSymptomCode}	
5.	<p>Perform the steps listed in article HT201398: If an app you installed unexpectedly quits, stops responding, or won't open to attempt to resolve the issue.</p> <p>Is the app issue resolved?</p>	Yes	<p>Issue resolved.</p> <p>Instruct user how to quit background processes on the device that are not performing as expected.</p> <p>Advise the user to follow steps listed in article HT201398: If an app you installed unexpectedly quits, stops responding, or won't open.</p>	\${nodeText.yesSymptomCode}	
		No	Go to step 6.	\${nodeText.noSymptomCode}	

	Check	Result	Action	Code	Commodity
6.	<p>Go to Settings > General > Reset > Erase All Content and Settings.</p> <p>Warning: This will delete all user data on the device. Verify the user has a backup or has given consent before proceeding.</p> <p>Is the app issue resolved?</p>	Yes	<p>Issue resolved by erasing all content and settings.</p> <p>Instruct user how to quit background processes on the device that are not performing as expected.</p> <p>Also advise the user to follow steps listed in article HT201398: If an app you installed unexpectedly quits, stops responding, or won't open.</p>	\$(nodeText.yesSymptomCode)	
		No	Go to step 7.	\$(nodeText.noSymptomCode)	
7.	<p>Follow the steps listed in article HT201252: Use iTunes on your Mac or PC to restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes.</p> <p>If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did restore complete?</p>	Yes	Go to step 9.	\$(nodeText.yesSymptomCode)	
		No	Go to step 8.	\$(nodeText.noSymptomCode)	
8.	<p>Perform the steps listed in articles HT201210: Resolve iOS update and restore errors in iTunes and HT204770: Get help with iOS update and restore errors to attempt to restore the device.</p> <p>Did restore complete?</p>	Yes	Go to step 9.	\$(nodeText.yesSymptomCode)	
		No	Replace whole unit. Covered if under warranty. Check for out-of-warranty repair options.	B0J	IPHONE
9.	<p>Advise user to set up the device as new, following instructions in article HT201274: How to erase your iOS device and then set it up as a new device or restore it from backups.</p> <p>Retest to determine if the user's device continues to exhibit app issues.</p> <p>Is the app issue resolved?</p>	Yes	<p>Issue resolved.</p> <p>If errors were found and fixed or if this was the first successful restore on the device, advise the user to see if the symptoms persist.</p>	\$(nodeText.yesSymptomCode)	
		No	Go to step 10.	\$(nodeText.noSymptomCode)	

	Check	Result	Action	Code	Commodity
10.	<p>Determine if the app is a part of the iOS or is a third-party developed app.</p> <p>Is the app part of iOS or third party?</p>	iOS	<p>ESCALATION REQUIRED.</p> <p>Contact ACS for additional support.</p> <p>Click the Help button in the GSX toolbar, then choose Troubleshooting > Technical Help with a Repair > Contact Apple.</p>	<p> <code> \${nodeText.yesSymptomCode} </code> </p>	
		Third Party	<p>Reinstall the affected third-party app and refer user to third-party app developer for support.</p>	<p> <code> \${nodeText.noSymptomCode} </code> </p>	

Unexpected Freeze/Restart/Power Off, “Connect to iTunes”

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none"> Device unexpectedly displays the Apple logo. <ul style="list-style-type: none"> Description: During normal use, Apple logo appears suddenly and unexpectedly (as if the device is restarting), then the device returns to normal operation at the Home screen. Device unexpectedly restarts to the Lock screen. <ul style="list-style-type: none"> Description: During normal use, Apple logo appears suddenly and unexpectedly (as if the device is restarting), then the device returns to the Lock screen, requiring Touch ID or passcode to return to Home screen. Device restarts and only displays the Apple logo. <ul style="list-style-type: none"> Description: During normal use, the device restarts (a spinning gear may or may not be seen), then freezes at the Apple logo and is unresponsive. Device display freezes (becomes unresponsive). <ul style="list-style-type: none"> Description: During normal use, the device becomes unresponsive (the clock does not update), but does not restart or turn off unexpectedly. Device unexpectedly displays “Connect to iTunes” screen. <ul style="list-style-type: none"> Description: During normal use, device becomes unresponsive and displays “Connect to iTunes” screen. Device unexpectedly turns off. <ul style="list-style-type: none"> Description: During normal use, the device turns off unexpectedly, and requires pressing the Sleep/Wake button to turn the device back on. <p>Note: While exhibiting any of the above symptoms, the device may also unexpectedly flash a red, blue, or any other color screen.</p>	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <p>If the device restarts, displays the Apple logo, or turns off while being used, follow all steps in article HT203899: If your iOS device restarts or displays the Apple logo or a spinning gear unexpectedly before performing any further troubleshooting.</p> <ol style="list-style-type: none"> Restart device. If unable to restart, try to reset device. On the device, go to Settings > General > Software Update to verify device has the most up-to-date software. If the device is unresponsive, verify that this issue is related to the device being unresponsive and not related to Multi-Touch. To verify that the device is unresponsive, view any clock display on the user’s device and verify that it does not update once every minute. For example, go to the Home screen on the user’s device and view the clock at the top of the display. You can also view the Clock app icon. The second hand on the Clock app icon will probably not move smoothly around the clock dial. If a clock display does update as expected, this may indicate a Multi-Touch issue and not an unresponsive device, and you should return to the list of symptoms and select “Multi-Touch Issues” from the troubleshooting menu. If the device does not respond or turn on, follow steps listed in article HT201412: If your iPhone, iPad, or iPod touch won’t turn on or is frozen. Always check symptoms in multiple apps, particularly built-in Apple apps, to verify that this is happening in all apps before servicing the device. If symptoms only occur when using particular app(s), return to the list of symptoms and select “App Issues” from the troubleshooting menu. If the device has unexpectedly turned off but cannot turn on again, back up and select the “No Power” troubleshooting flow. Do not continue with this troubleshooting flow in this case. If the user’s device is an iPhone 6, iPhone 6 Plus, or iPhone SE running iOS 11.3 or later, follow steps listed in HT208387: iPhone Battery and Performance to view Peak Performance Capability in Settings > Battery > Battery Health. Performance management features may have been applied to help prevent unexpected shutdowns. In iOS 11.3 and later this feature can be disabled. If the user’s device is experiencing unexpected shutdowns because the battery was unable to deliver the necessary peak power, performance management may need to remain enabled. If you suspect that the battery may need service, go back and select “Battery Life Too Short” from the troubleshooting menu.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	<p>Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.</p> <p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Is the device in warranty and eligible for warranty service?</p>	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 2.	`\${nodeText.noSymptomCode}`	
2.	<p>Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).</p> <p>Is the device eligible for out-of-warranty service?</p>	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	`\${nodeText.noSymptomCode}`	
3.	<p>If the device restarts, displays the Apple logo, or turns off while being used, follow all steps in article HT203899: If your iOS device restarts or displays the Apple logo or a spinning gear unexpectedly before performing any further troubleshooting.</p> <p>Does the device contain more than two recent logs with the word “panic” in the file name?</p>	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B81	IPHONE
		No	Go to step 4.	`\${nodeText.noSymptomCode}`	
4.	<p>Follow steps listed in article HT201252: Restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did restore complete?</p>	Yes	Go to step 6.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 5.	`\${nodeText.noSymptomCode}`	
5.	<p>Perform the steps listed in articles HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod and HT204770: Get help with iOS update and restore errors to attempt to restore the device.</p> <p>Did restore complete?</p>	Yes	Go to step 6.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 7.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
6.	<p>Retest to determine if the user's device continues to have this issue.</p> <p>Is the issue resolved?</p>	Yes	<p>Issue resolved.</p> <p>If errors were found and corrected or if this was the first successful restore on the device, advise the customer to see if the symptoms persist.</p>	`\${nodeText.yesSymptomCode}`	
		No	Go to step 7.	`\${nodeText.noSymptomCode}`	
7.	<p>Determine if the issue is caused by the device exhibiting the following symptom:</p> <ul style="list-style-type: none"> Device unexpectedly displays "Connect to iTunes" screen <p>Does the device exhibit this symptom?</p>	Yes	<p>Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.</p>	B0J	IPHONE
		No	Go to step 8.	`\${nodeText.noSymptomCode}`	
8.	<p>Determine if the issue is caused by the device exhibiting any of the following symptoms:</p> <ul style="list-style-type: none"> Device unexpectedly displays the Apple logo Device unexpectedly restarts to the Lock screen Device unexpectedly turns off and can be turned on again manually <p>Does the device exhibit any of these symptoms?</p>	Yes	<p>Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.</p>	B81	IPHONE
		No	Go to step 9.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
9.	<p>Determine if the issue is caused by the device exhibiting any of the following symptoms:</p> <ul style="list-style-type: none"> • Device becomes unresponsive (display appears frozen) • Device restarts and only displays the Apple logo 	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B85	IPHONE
	<p>Note: While exhibiting any of the above symptoms, the device may also unexpectedly flash a red, blue, or any other color screen.</p> <p>Does the device exhibit any of these symptoms?</p>	No	<p>ESCALATION REQUIRED.</p> <p>Contact ACS for additional support or a multiple-part repair.</p>	B81	

Headphone Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">No sound in headphonesSound from only one channel in headphonesDistorted sound in headphones	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">If issue is with speaker audio, return to the list of symptoms and select “Speaker/Receiver Issues” troubleshooting flow.Verify headphone is fully inserted into headphone jack. Make sure a case or protective film is not interfering.On the device, go to Settings > General > Software Update to verify device has most up-to-date software. If unavailable, verify by plugging device into iTunes.Check volume level with volume up/down buttons.Verify music/audio is not paused.Check Settings > Music > Volume Limit.Go to Settings > General > Accessibility and verify “Mono Audio” option setting is not enabled (for those who do not require it).

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 3.	\$(nodeText.yesSymptomCode)	
	<p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Is the device in warranty and eligible for warranty service?</p>	No	Go to step 2.	\$(nodeText.noSymptomCode)	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).	Yes	Go to step 3.	\$(nodeText.yesSymptomCode)	
	<p>Is the device eligible for out-of-warranty service?</p>	No	Return device to user. Due to damage, the device is no longer eligible for support.	\$(nodeText.noSymptomCode)	

	Check	Result	Action	Code	Commodity
3.	<p>Check that headphone jack is not obstructed with lint or debris. Attempt to clean any debris in accordance with TP320: iPhone, iPad, iPod: Cleaning Procedures.</p> <p>Are you able to clean the headphone jack?</p>	Yes	Go to step 4.	`\${nodeText.yesSymptomCode}`	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B91	IPHONE
4.	<p>Play known-good media or go to Settings > Sound > Ringtone and select a ringtone.</p> <p>Is the headphone issue resolved?</p>	Yes	Issue resolved.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 5.	`\${nodeText.noSymptomCode}`	
5.	<p>Try known-good Apple Headphones.</p> <p>Play known-good media or go to Settings > Sound > Ringtone and select a ringtone.</p> <p>Is the headphone issue resolved?</p>	Yes	<p>Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.</p> <p>If user has third-party headphones, refer to manufacturer for support.</p>	B09	IPHONE ACCESSORY
		No	Go to step 6.	`\${nodeText.noSymptomCode}`	
	<p>Note: You should refer to the specific take-apart procedure for your device model for instructions to perform the following take-apart and reassembly steps:</p> <ol style="list-style-type: none"> Open device. <p>Caution (applies to iPhone 5s and iPhone SE): When opening the device, be careful to avoid damaging or tearing the home button flex cable that is connected from the underside of the display assembly to the logic board. Be sure to remove the home button flex cabling and disconnect the home button flex cable connector from the logic</p>	Yes	This device has unauthorized modifications. Document test failure, process a repair, use part number 011-0659 Micro-Inspection 1. Return the device to the user.	`\${nodeText.yesSymptomCode}`	

6.	<p>board using ESD-safe tweezers, before doing anything else inside. Refer to the service guide procedure titled 'Open Device' for complete instructions.</p> <ol style="list-style-type: none"> On iPhone 5, remove the speaker module to gain access to the circuit board below the left side of the speaker module. On iPhone 5s and SE, remove the two screws for the Touch ID connector that are left of the speaker. Lift up the connector and flex cable to inspect the components below. You do not need to completely remove the iPhone 5s or SE speaker module to do this. Closely inspect the group of electronic components located on a small circuit board next to the headphone jack, in the lower-left corner of the device. You may need to use the USB microscope to do this. The example shown is for an iPhone 5. Other models may have slightly different components or may be arranged differently. If any of the components in this area appear chipped, burned, cracked, melted, broken off, or otherwise damaged, this may explain the cause of the symptoms for this issue. Reassemble by installing the speaker module and closing the device. <p>Caution (applies to iPhone 5s and iPhone SE): Before closing the display, verify that the home button flex cable connector is securely connected to the logic board, and that the home button flex cowling has been reattached, using ESD-safe tweezers. Refer to the service guide procedure titled 'Open Device' for complete instructions.</p>	No	Go to step 7.	<p>\$(nodeText.noSymptomCode)</p>	
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	Are any components in this area damaged?				
7.	Go to Settings > General > Reset > Erase All Content and Settings.	Yes	Issue resolved.	\$(nodeText.yesSymptomCode)	
	Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.				
	Play known-good media or go to Settings > Sound > Ringtone and select a ringtone.	No	Go to step 8.	\$(nodeText.noSymptomCode)	
	Is the headphone issue resolved?				
8.	Follow the steps listed in article HT201252: Use iTunes on your Mac or PC to restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore .	Yes	Go to step 10.	\$(nodeText.yesSymptomCode)	
	Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.				
	Did restore complete?	No	Go to step 9.	\$(nodeText.noSymptomCode)	

	Check	Result	Action	Code	Commodity
9.	Perform the steps listed in articles HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod and HT204770: Get help with iOS update and restore errors to attempt to restore the device. Did restore complete?	Yes	Go to step 10.	\${nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0J	IPHONE
10.	Play known-good media or go to Settings > Sound > Ringtone and select a ringtone. Is the headphone issue resolved?	Yes	Issue resolved.	\${nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B68	IPHONE

Headphone Microphone Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">No audio from Apple EarPods with Remote microphoneDistorted sound from Apple EarPods with Remote microphoneButtons on Apple EarPods with Remote do not function	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">If issue is with device microphone, return to the list of symptoms and select “Microphone Issues” from the troubleshooting menu.Verify Apple EarPods with Remote and Mic is fully inserted into headphone jack. Make sure a case or protective film is not interfering.On the device, go to Settings > General > Software Update to verify device has most up-to-date software. If unavailable, verify by plugging device into iTunes.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility. Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service. Is the device in warranty and eligible for warranty service?	Yes	Go to step 3.	\$(nodeText.yesSymptomCode)	
		No	Go to step 2.	\$(nodeText.noSymptomCode)	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI). Is the device eligible for out-of-warranty service?	Yes	Go to step 3.	\$(nodeText.yesSymptomCode)	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	\$(nodeText.noSymptomCode)	

	Check	Result	Action	Code	Commodity
3.	<p>Check that headphone jack is not obstructed with lint or debris. Attempt to clean any debris in accordance with TP320: iPhone, iPad, iPod: Cleaning Procedures.</p> <p>Are you able to clean the headphone jack?</p>	Yes	Go to step 4.	\${nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B91	IPHONE
4.	<p>Open Voice Memos app.</p> <p>Using the Apple EarPods with Remote and Mic, create a recording and play it back.</p> <p>Did the device record audio as expected?</p>	Yes	Issue resolved.	\${nodeText.yesSymptomCode}	
		No	Go to step 5.	\${nodeText.noSymptomCode}	
5.	<p>Substitute known-good Apple EarPods with Remote and Mic.</p> <p>Ensure the headphone plug is completely inserted into the device's headphone jack.</p> <p>Open Voice Memos app. Using the Apple EarPods with Remote and Mic, create a recording and play it back.</p> <p>Did the device record audio as expected?</p>	Yes	Go to step 6.	\${nodeText.yesSymptomCode}	
		No	Go to step 7.	\${nodeText.noSymptomCode}	

	Check	Result	Action	Code	Commodity
6.	<p>Continue to use known-good Apple EarPods with Remote and Mic with user's device.</p> <p>Navigate to Home screen on user's device and perform the following tests of the buttons on the Apple EarPods with Remote and Mic.</p> <ol style="list-style-type: none"> 1. Press the plus (+) and minus (-) buttons on the Apple EarPods with Remote and Mic. This should activate the volume control Up and Down functions respectively. The volume display should appear on the device's screen along with the words "Headphones", and the volume setting should increase and decrease as these buttons are pressed. 2. Press and hold the middle button (between the plus and minus buttons) on the Apple EarPods with Remote and Mic. This should activate Siri (or Voice Control if Siri has been disabled.) Observe the device's display to confirm whether Siri or Voice Control appears when the middle button is pressed and held down. <p>If any of the above button tests do not perform as expected, answer "No" to the question below.</p> <p>Do all button tests perform as expected?</p>	Yes	<p>Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.</p> <p>If user has third-party headphones, refer to manufacturer for support.</p>	B09	IPHONE ACCESSORY
		No	Go to step 7.	\$(nodeText.noSymptomCode)	
	<p>Note: You should refer to the specific take-apart procedure for your device model for instructions to perform the following take-apart and reassembly steps:</p> <ol style="list-style-type: none"> 1. Open device. Caution (applies to iPhone 5s and iPhone SE) When opening the device, be careful to avoid damaging or tearing the home button flex cable that is connected from the underside of the display assembly to the logic board. Be sure to remove the home button flex cabling and disconnect the home button flex cable connector from the logic board using ESD-safe tweezers, before doing anything else inside. Refer 	Yes	<p>This device has unauthorized modifications. Document test failure, process a repair, use part number 011-0659 Micro-Inspection 1. Return the device to the user.</p>	\$(nodeText.yesSymptomCode)	

7.	<p>to the service guide procedure titled 'Open Device' for complete instructions.</p> <ol style="list-style-type: none"> On iPhone 5, remove the speaker module to gain access to the circuit board below the left side of the speaker module. On iPhone 5s and SE, remove the two screws for the Touch ID connector that are left of the speaker. Lift up the connector and flex cable to inspect the components below. You do not need to completely remove the iPhone 5s or SE speaker module to do this. Closely inspect the group of electronic components located on a small circuit board next to the headphone jack, in the lower-left corner of the device. You may need to use the USB microscope to do this. The example shown is for an iPhone 5. Other models may have slightly different components or may be arranged differently. If any of the components in this area appear chipped, burned, cracked, melted, broken off, or otherwise damaged, this may explain the cause of the symptoms for this issue. Reassemble by installing the speaker module and closing the device. <p>Caution (applies to iPhone 5s and iPhone SE): Before closing the display, verify that the home button flex cable connector is securely connected to the logic board, and that the home button flex cowling has been reattached, using ESD-safe tweezers. Refer to the service guide procedure titled 'Open Device' for complete instructions.</p>	No	Go to step 8.	\${nodeText.noSymptomCode}	
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	Are any components in this area damaged?				
8.	Go to Settings > General > Reset > Erase All Content and Settings.	Yes	Issue resolved.	`\${nodeText.yesSymptomCode}`	
	<p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Open Voice Memos app. Using the Apple EarPods with Remote and Mic, create a recording and play it back.</p> <p>Did the device record audio as expected?</p>	No	Go to step 9.	`\${nodeText.noSymptomCode}`	
9.	Follow the steps listed in article HT201252: Use iTunes on your Mac or PC to restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore .	Yes	Go to step 11.	`\${nodeText.yesSymptomCode}`	
	<p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did restore complete?</p>	No	Go to step 10.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
10.	Perform the steps listed in articles HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod and HT204770: Get help with iOS update and restore errors to attempt to restore the device. Did restore complete?	Yes	Go to step 11.	\${nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0J	IPHONE
11.	Open Voice Memos app. Using the Apple EarPods with Remote and Mic, create a recording and play it back. Did the device record audio as expected?	Yes	Issue resolved.	\${nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B68	IPHONE

Microphone Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">• Microphone not functioning• Distorted sound from microphone• User cannot be heard while on telephone call• Audio quality issues during telephone calls, such as poor or low sound volume, or distorted sound	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">1. If issue is with the microphone built-in to the Apple headset, return to the list of symptoms and select “Headphone Microphone Issues” from the troubleshooting menu.2. Make sure case or protective film is not obstructing the microphone.3. Follow steps listed in HT203792: Get help with the microphones on your iPhone, iPad, and iPod touch and HT203800: If you can't hear a person on a call or voicemail or if the sound isn't clear on your iPhone.4. On the device, go to Settings > General > Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging the device into iTunes.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 3.	\$(nodeText.yesSymptomCode)	
	Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.	No	Go to step 2.	\$(nodeText.noSymptomCode)	
2.	Is the device in warranty and eligible for warranty service?				
	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).	Yes	Go to step 3.	\$(nodeText.yesSymptomCode)	
	Is the device eligible for out-of-warranty service?	No	Return device to user. Due to damage, device is no longer eligible for support.	\$(nodeText.noSymptomCode)	

	Check	Result	Action	Code	Commodity
3.	<p>Verify that the microphones are not obstructed with lint or debris. Check these microphone locations:</p> <ul style="list-style-type: none"> • Bottom of device • Receiver mesh • Back of device near iSight camera <p>Attempt to clean any debris in accordance with TP320: iPhone, iPad, iPod: Cleaning Procedures.</p> <p>Are you able to clean the device?</p>	Yes	Go to step 4.	\${nodeText.yesSymptomCode}	IPHONE
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B91	
4.	<p>Run the Audio diagnostic in AST 2 to verify that all microphones function properly on the user's device.</p> <p>If the speaker or receiver tests failed, then return to the list of symptoms and select “Speaker / Receiver Issues” from the troubleshooting menu.</p> <p>If AST 2 is not available, then follow the steps listed in TP1045: Functional Test to verify that all microphones function properly on the user's device.</p> <p>Do all audio tests pass on user's device?</p>	Yes	Go to step 5.	\${nodeText.yesSymptomCode}	
		No	Go to step 6.	\${nodeText.noSymptomCode}	
5.	<p>If the issue is that the user cannot be heard while on a telephone call, then use a known-good phone (does not need to be an iPhone) to place a phone call to the user's device.</p> <p>Have a short spoken conversation on the call, while speaking and listening in a normal voice, to verify audio is present in both directions, and that audio quality is as expected during the call.</p> <p>Was audio quality as expected?</p>	Yes	Issue resolved by cleaning the device.	\${nodeText.yesSymptomCode}	
		No	Go to step 6.	\${nodeText.noSymptomCode}	
6.	<p>Check the AST 2 Diagnostic Console for the result or warning. It is possible the Audio diagnostic could not run due to a headset jack issue.</p> <p>Does the AST 2 Audio Test run to completion with a PASS/FAIL result?</p>	Yes	Go to step 10.	\${nodeText.yesSymptomCode}	
		No	Go to step 7.	\${nodeText.noSymptomCode}	

	Check	Result	Action	Code	Commodity
7.	<p>Press the Volume Up or Volume Down button while looking at the on screen display. Look for the word “Headphone” above the icon.</p> <p>Does the “Headphone” indicator appear when adjusting the volume?</p>	Yes	Go to step 8.	\${nodeText.yesSymptomCode}	
		No	Go to step 9.	\${nodeText.noSymptomCode}	
8.	<p>Check that the headset jack is not obstructed with lint or debris. Attempt to clean any debris in accordance with TP320: iPhone, iPad, iPod: Cleaning Procedures.</p> <p>Are you able to clean these areas?</p>	Yes	Go to step 9.	\${nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B91	IPHONE
9.	<p>Run the Audio diagnostic in AST 2 to verify that the speaker and receiver function properly on the user’s device.</p> <p>If the speaker or receiver tests failed, then return to the list of symptoms and select “Speaker / Receiver Issues” from the troubleshooting menu.</p> <p>If AST 2 is not available, then follow the steps listed in TP1045: Functional Test to verify that the speaker and receiver function properly on the user’s device.</p> <p>Do all audio tests pass on user’s device?</p>	Yes	Issue resolved by cleaning the device.	\${nodeText.yesSymptomCode}	
		No	Go to step 10.	\${nodeText.noSymptomCode}	
10.	<p>Follow the steps listed in article HT201252: Restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did restore complete?</p>	Yes	Go to step 12.	\${nodeText.yesSymptomCode}	
		No	Go to step 11.	\${nodeText.noSymptomCode}	

	Check	Result	Action	Code	Commodity
11.	<p>Perform the steps listed in articles HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod and HT204770: Get help with iOS update and restore errors to attempt to restore the device.</p> <p>Did restore complete?</p>	Yes	Go to step 12.	\$(nodeText.yesSymptomCode)	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0J	IPHONE
12.	<p>Run the Audio diagnostic in AST 2 to verify that all microphones function properly on the user's device.</p> <p>If AST 2 is not available, then follow the steps listed in TP1045: Functional Test to test microphone sound quality.</p> <p>Do all audio tests pass on user's device?</p>	Yes	Go to step 13.	\$(nodeText.yesSymptomCode)	
		No	Go to step 14.	\$(nodeText.noSymptomCode)	
13.	<p>If the issue is that the user cannot be heard while on a telephone call, then use a known-good phone (does not need to be an iPhone) to place a phone call to the user's device.</p> <p>Have a short spoken conversation on the call, while speaking and listening in a normal voice, to verify audio is present in both directions, and that audio quality is as expected during the call.</p> <p>Was audio quality as expected?</p>	Yes	Issue resolved by restoring iOS.	\$(nodeText.yesSymptomCode)	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B7B	IPHONE
14.	<p>Check the AST 2 Diagnostic Console for the result or warning. It is possible the Audio diagnostic could not run due to a headset jack issue.</p> <p>Does the AST 2 Audio Test run to completion with a PASS/FAIL result?</p>	Yes	Go to step 16.	\$(nodeText.yesSymptomCode)	
		No	Go to step 15.	\$(nodeText.noSymptomCode)	

	Check	Result	Action	Code	Commodity
15.	<p>Press the Volume Up or Volume Down button while looking at the on screen display. Look for the word “Headphone” above the icon.</p> <p>Does the “Headphone” indicator appear when adjusting the volume?</p>	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B91	IPHONE
		No	Go to step 16.	\${nodeText.noSymptomCode}	
16.	<p>Determine which component failed the diagnostic test: rear/back microphone, bottom microphone, or top/front microphone.</p> <p>If the speaker or receiver tests failed, then return to the list of symptoms and select “ Speaker / Receiver Issues” from the troubleshooting menu.</p> <p>Which microphone failed the audio test?</p>	Bottom or Rear/Back	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B64	IPHONE
		Top/Front	Go to step 17.	\${nodeText.noSymptomCode}	

	Check	Result	Action	Code	Commodity
17.	Determine if the device has any physical damage that makes this component repair impossible.	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B64	IPHONE COMP DISPLAY
	Is the device eligible for a component repair?	No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B64	IPHONE

No Ringer Sound

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">No ringer sound	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">On the device, go to Settings > General > Software Update to verify device has most up-to-date software. If unavailable, verify by plugging device into iTunes.Check Ring/Silent switch is set for ring and not vibrate.Check volume level with volume up/down buttons.Check ringtone volume setting in Settings > Sounds.Clean speaker. Important: Compressed air should never be used to clean any part of an iOS device. Use only an anti-static brush.Restart device. If unable to restart, try to reset device.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility. Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service. Also refer to article HT204695: Handling a mixed-failure repair if appropriate. Is the device in warranty and eligible for warranty service?	Yes	Go to step 4.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 2.	`\${nodeText.noSymptomCode}`	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI). Is the device eligible for out-of-warranty service?	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
3.	Inspect the device for liquid damage by checking for: <ul style="list-style-type: none"> • Internal LCI red • Signs of corrosion • Presence of liquid 	Yes	Replace whole unit out of warranty.	B90	IPHONE
		No	Go to step 4.	`\${nodeText.noSymptomCode}`	
	Is liquid damage present?				
4.	Check that the speaker opening is not obstructed with lint or debris. Attempt to clean any debris in accordance with TP320: iPhone, iPad, iPod: Cleaning Procedures .	Yes	Go to step 5.	`\${nodeText.yesSymptomCode}`	
		No	Replace the whole unit out of warranty.	B91	IPHONE
	Are you able to clean this area?				
5.	Go to Settings > Sounds > Ringtone and select a ringtone.	Yes	Issue resolved by cleaning device.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 6.	`\${nodeText.noSymptomCode}`	
	Does the device ring?				
6.	Go to Settings > General > Reset > Erase All Content and Settings. Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding. Go to Settings > Sounds > Ringtone and select a ringtone.	Yes	Issue resolved.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 7.	`\${nodeText.noSymptomCode}`	
	Does the device ring?				
7.	Follow steps listed in article HT201252: Use iTunes on your Mac or PC to restore your iOS device to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore . Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.	Yes	Go to step 9.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 8.	`\${nodeText.noSymptomCode}`	
	Did restore complete?				
8.	Perform the steps listed in articles HT201210: Resolve iOS update and restore errors in iTunes and HT204770: Get help with iOS update and restore errors to attempt to restore the device.	Yes	Go to step 9.	`\${nodeText.yesSymptomCode}`	
		No	Replace the whole unit. Covered if under warranty. Check for out-of-warranty repair options.	B0J	IPHONE
	Did restore complete?				
9.	Go to Settings > Sounds > Ringtone and select a ringtone.	Yes	Issue resolved.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 10.	`\${nodeText.noSymptomCode}`	
	Does the device ring?				

	Check	Result	Action	Code	Commodity
10.	Determine if the device has any physical damage that makes this component repair impossible.	Yes	Replace speaker module. Covered if under warranty. Check for out-of-warranty repair options.	B63	IPHONE COMP SPEAKER
	Is the device eligible for a component repair?	No	Replace the whole unit out of warranty.	B63	IPHONE

No Vibrate

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">Device does not vibrate when expected	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <p>Note: This procedure is for vibration issues only. If the issue is related to the Ring/Silent switch or other device buttons, return to the list of symptoms and select “Button Issues” from the troubleshooting menu.</p> <ol style="list-style-type: none">Toggle the Ring/Silent switch.Check Vibrate settings for both Silent and Ring in Settings > Sounds.Restart device. If unable to restart, try to reset device.On the device, go to Settings > General > Software Update to verify device has most up-to-date software. If unavailable, verify by plugging device into iTunes.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility. Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service. Also refer to HT204695: Handling a mixed-failure repair if appropriate. Is the device in warranty and eligible for warranty service?	Yes	Go to step 3.	\${nodeText.yesSymptomCode}	
		No	Go to step 2.	\${nodeText.noSymptomCode}	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI). Is the device eligible for out-of-warranty service?	Yes	Go to step 3.	\${nodeText.yesSymptomCode}	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	\${nodeText.noSymptomCode}	

	Check	Result	Action	Code	Commodity
3.	On the device, go to Settings > Sounds and toggle the “Vibrate on Ring” setting from Off to On.	Yes	Go to step 4.	#{nodeText.yesSymptomCode}	
	This will momentarily activate the vibration motor. Does the device vibrate?	No	Go to step 5.	#{nodeText.noSymptomCode}	
4.	Toggle the Ring/Silent switch.	Yes	Issue resolved.	#{nodeText.yesSymptomCode}	
	This will momentarily activate the vibration motor. Does the device vibrate?	No	Replace the whole unit. Covered if under warranty. Check for out-of-warranty repair options.	B37	IPHONE
5.	Go to Settings > General > Reset > Erase All Content and Settings.	Yes	Issue resolved.	#{nodeText.yesSymptomCode}	
	Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding. Toggle the Ring/Silent switch. Does the device vibrate?	No	Go to step 6.	#{nodeText.noSymptomCode}	
6.	Follow the steps listed in article HT201252: Use iTunes on your Mac or PC to restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore .	Yes	Go to step 8.	#{nodeText.yesSymptomCode}	
	Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding. Did restore complete?	No	Go to step 7.	#{nodeText.noSymptomCode}	
7.	Perform the steps listed in articles HT201210: Resolve iOS update and restore errors in iTunes and HT204770: Get help with iOS update and restore errors to attempt to restore the device.	Yes	Go to step 8.	#{nodeText.yesSymptomCode}	
	Did restore complete?	No	Replace the whole unit. Covered if under warranty. Check for out-of-warranty repair options.	B0J	IPHONE
8.	Toggle the Ring/Silent switch.	Yes	Issue resolved.	#{nodeText.yesSymptomCode}	
	Does the device vibrate?	No	Go to step 9.	#{nodeText.noSymptomCode}	

	Check	Result	Action	Code	Commodity
9.	Determine if the device has any physical damage that makes this component repair impossible.	Yes	Replace vibe motor. Covered if under warranty. Check for out-of-warranty repair options.	B32	IPHONE COMPONENT
	Is the device eligible for a component repair?	No	Replace the whole unit out of warranty.	B32	IPHONE

Speaker / Receiver Issues

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">No sound from speaker at the base of the deviceNo sound from receiverDistorted sound from speaker or receiverUser cannot be heard while on telephone callAudio quality issues during telephone calls, such as poor or low sound volume, or distorted sound	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">If issue is with headphone audio, then return to the list of symptoms and select “Headphone Issues” from the troubleshooting menu.Follow steps listed in HT203800: If you can’t hear a person on a call or voicemail or if the sound isn’t clear on your iPhone.On the device, go to Settings > General > Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging device into iTunes.Check volume level using volume up/down buttons.Verify music/audio is not paused.Check Settings > Music > Volume Limit.Go to Settings > General > Accessibility and verify “Mono Audio” is not enabled (for those who do not require it).Make sure case or protective film is not obstructing the speaker or receiver. <p>Note: There is only one speaker at the bottom of the device. The other opening is a microphone.</p> <p>The receiver is covered with mesh and located on the front of the device, toward the top of the display, next to the front-facing camera.</p>

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	<p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Is the device in warranty and eligible for warranty service?</p>	No	Go to step 2.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI). Is the device eligible for out-of-warranty service?	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
		No	Return device to user. Due to damage, device is no longer eligible for support.	`\${nodeText.noSymptomCode}`	
3.	Check that the speaker opening, receiver mesh, and headphone jack opening are not obstructed with lint or debris. Attempt to clean any debris in accordance with TP320: iPhone, iPad, iPod: Cleaning Procedures . Are you able to clean these areas?	Yes	Go to step 4.	`\${nodeText.yesSymptomCode}`	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B91	IPHONE
4.	Run the Audio diagnostic in AST 2 to verify that the speaker and receiver function properly on the user's device. If the microphone tests failed, then return to the list of symptoms and select the “ Microphone Issues ” from the troubleshooting menu. If AST 2 is not available, then follow the steps listed in TP1045: Functional Test to verify that the speaker and receiver function properly on the user's device. Do all audio tests pass on user's device?	Yes	Go to step 5.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 6.	`\${nodeText.noSymptomCode}`	
5.	If the issue is that the user cannot be heard while on a telephone call, then use a known-good phone (does not need to be an iPhone) to place a phone call to the user's device. Have a short spoken conversation on the call, while speaking and listening in a normal voice, to verify audio is present in both directions, and that audio quality is as expected during the call. Was audio quality as expected?	Yes	Issue resolved by cleaning the device.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 6.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
6.	<p>Check the AST 2 Diagnostic Console for the result or warning. It is possible the Audio diagnostic could not run due to a headset jack issue.</p> <p>Does the AST 2 Audio Test run to completion with a PASS/FAIL result?</p>	Yes	Go to step 10.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 7.	`\${nodeText.noSymptomCode}`	
7.	<p>Press the Volume Up or Volume Down button while looking at the on screen display. Look for the word “Headphone” above the icon.</p> <p>Does the “Headphone” indicator appear when adjusting the volume?</p>	Yes	Go to step 8.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 9.	`\${nodeText.noSymptomCode}`	
8.	<p>Check that the headset jack is not obstructed with lint or debris. Attempt to clean any debris in accordance with TP320: iPhone, iPad, iPod: Cleaning Procedures.</p> <p>Are you able to clean these areas?</p>	Yes	Go to step 9.	`\${nodeText.yesSymptomCode}`	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B91	IPHONE
9.	<p>Run the Audio diagnostic in AST 2 to verify that the speaker and receiver function properly on the user’s device.</p> <p>If the microphone tests failed, then return to the list of symptoms and select the “ Microphone Issues” from the troubleshooting menu.</p> <p>If AST 2 is not available, then follow the steps listed in TP1045: Functional Test to verify that the speaker and receiver function properly on the user’s device.</p> <p>Do all audio tests pass on user’s device?</p>	Yes	Issue resolved by cleaning the device.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 10.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
10.	<p>Follow the steps listed in article HT201252: Restore your iPhone, iPad, or iPod to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore.</p> <p>Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.</p> <p>Did restore complete?</p>	Yes	Go to step 12.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 11.	`\${nodeText.noSymptomCode}`	
11.	<p>Perform the steps listed in articles HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod and HT204770: Get help with iOS update and restore errors to attempt to restore the device.</p> <p>Did restore complete?</p>	Yes	Go to step 12.	`\${nodeText.yesSymptomCode}`	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0J	IPHONE
12.	<p>Run the Audio diagnostic in AST 2 to verify that the speaker and receiver function properly on the user's device.</p> <p>If AST 2 is not available, then follow the steps listed in TP1045: Functional Test to test speaker and receiver sound quality.</p> <p>Do all audio tests pass on user's device?</p>	Yes	Go to step 13.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 14.	`\${nodeText.noSymptomCode}`	
13.	<p>If the issue is that the user cannot be heard while on a telephone call, then use a known-good phone (does not need to be an iPhone) to place a phone call to the user's device.</p> <p>Have a short spoken conversation on the call, while speaking and listening in a normal voice, to verify audio is present in both directions, and that audio quality is as expected during the call.</p> <p>Was audio quality as expected?</p>	Yes	Issue resolved by restoring iOS.	`\${nodeText.yesSymptomCode}`	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B7B	IPHONE

	Check	Result	Action	Code	Commodity
14.	<p>Check the AST 2 Diagnostic Console for the result or warning. It is possible the Audio diagnostic could not run due to a headset jack issue.</p> <p>Does the AST 2 Audio Test run to completion with a PASS/FAIL result?</p>	Yes	Go to step 16.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 15.	`\${nodeText.noSymptomCode}`	
15.	<p>Press the Volume Up or Volume Down button while looking at the on screen display. Look for the word “Headphone” above the icon.</p> <p>Does the “Headphone” indicator appear when adjusting the volume?</p>	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B91	IPHONE
		No	Go to step 16.	`\${nodeText.noSymptomCode}`	
16.	<p>Determine which component failed the diagnostic test: speaker or receiver.</p> <p>If the microphone tests failed, then return to the list of symptoms and select “ Microphone Issues ” from the troubleshooting menu.</p> <p>Which component failed the diagnostic test?</p>	Speaker	Go to step 17.	`\${nodeText.yesSymptomCode}`	
		Receiver	Go to step 18.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
17.	Determine if the device has any physical damage that makes this component repair impossible.	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B63	IPHONE COMP SPEAKER
	Is the device eligible for a component repair?	No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B63	IPHONE
18.	Determine if the device has any physical damage that makes this component repair impossible. Is the device eligible for a component repair?	Yes	Go to step 19.	`\${nodeText.yesSymptomCode}`	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B7A	IPHONE

	Check	Result	Action	Code	Commodity
19.	<p>To completely troubleshoot this issue, a known-good receiver is required.</p> <p>Do you have immediate access to a known-good receiver module?</p>	Yes	Go to step 20.	\${nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B7A	IPHONE COMP RECEIVER
20.	<p>Follow Service Guide instructions to open the user's device and remove the receiver module.</p> <p>Temporarily substitute the known-good receiver module in the user's device.</p> <p>Run the Audio diagnostic in AST 2 again to verify that the known-good receiver module functions properly.</p> <p>If AST 2 is not available, then follow the steps listed in TP1045: Functional Test to test receiver sound quality.</p> <p>Do all audio tests pass on user's device?</p>	Yes	<p>Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.</p> <p>It may be possible to send the device to a "Repair or Replace" mail-in facility to have the display replaced if receiver replacement does not resolve the issue.</p>	B7A	IPHONE COMP RECEIVER
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B7A	IPHONE

Battery Life Too Short

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">Battery runs out of power very quicklyBattery does not hold a chargeShort play time	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <ol style="list-style-type: none">On the device, go to Settings > General > Software Update to verify device has the most up-to-date software. If unavailable, verify by plugging device into iTunes.On the device, go to Settings > Battery to check power consumption by app.Suggest www.apple.com/batteries as a resource for the user to learn about optimizing battery settings. Also refer to steps in article HT203735: Get help maximizing battery life.Check the status bar indicator. It reflects the remaining battery life, including battery percentage. Turn on the battery percentage indicator using Settings > Battery.Check that the correct USB Power Adapter is being used to charge the device. Other power adapters may not provide enough power to charge the device.Connect to a power outlet and charge the device with a known-good 10–12W Apple USB power adapter for ten minutes.Try the Lightning connector in both orientations.Restart device. If unable to restart, then try to reset device.Refer to article HT201954: Unauthorized modification of iOS can cause security vulnerabilities, instability, shortened battery life, and other issues. <p>Note: If any of the above checks indicate that the device has no power and does not turn on, then return to the list of symptoms and select “No Power” from the troubleshooting menu.</p> <p>Important: Battery and charge indicators can fluctuate briefly when connecting the device to power or waking it from sleep. If this occurs, wait a few seconds, then check again. Battery percentage can remain at 99 percent with a full charge. This is expected behavior and does not indicate a battery or hardware issue.</p>

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility. Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service. Is the device in warranty and eligible for warranty service?	Yes	Go to step 3.	\${nodeText.yesSymptomCode}	
		No	Go to step 2.	\${nodeText.noSymptomCode}	
2.	Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI). Is the device eligible for out-of-warranty service?	Yes	Go to step 3.	\${nodeText.yesSymptomCode}	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	\${nodeText.noSymptomCode}	
3.	Run AST 2 MRI to verify battery condition. Check diagnostic results for a result of: <ul style="list-style-type: none"> • “Passed” or “Normal” Do not restore the user’s device before running AST 2. Is the battery condition “Passed” or “Normal”?	Yes	Go to step 4.	\${nodeText.yesSymptomCode}	
		No	Go to step 12.	\${nodeText.noSymptomCode}	
4.	Use diagnostics to determine usage and standby time. If usage time is the same as standby time, then the device has not been able to go to sleep because of active use or something else preventing the device from sleeping. Note: The device is awake whenever the display is on, or when the user is making or receiving a call, using apps, listening to music, browsing the web, sending or receiving email, using location services such as GPS, or if an app refreshes in the background. Are usage times and standby times the same duration?	Yes	Go to step 6.	\${nodeText.yesSymptomCode}	
		No	Go to step 5.	\${nodeText.noSymptomCode}	

	Check	Result	Action	Code	Commodity
5.	<p>Use diagnostics to determine any crashing apps that may be draining the battery.</p> <p>Note: It is generally not necessary to force an app to close unless the app is unresponsive. You can view all recently used apps by double-clicking the Home button. These apps are not open; they are in a suspended state.</p> <p>Are there any crashing apps listed?</p>	Yes	Go to step 6.	\$(nodeText.yesSymptomCode)	
		No	Go to step 7.	\$(nodeText.noSymptomCode)	
6.	<p>Restart device. If unable to restart, then try to reset device.</p> <p>Have the user use the device for several minutes, then allow the device to sleep for several minutes.</p> <p>Note battery level before and after usage to determine if battery life issue persists.</p> <p>Does battery life issue persist?</p>	Yes	Go to step 9.	\$(nodeText.yesSymptomCode)	
		No	<p>Issue resolved by restarting or resetting device.</p> <p>Advise the user to follow steps listed in article HT201398: If an app you installed unexpectedly quits, stops responding, or won't open.</p>	\$(nodeText.noSymptomCode)	
7.	<p>Run the Battery Usage diagnostic in AST 2.</p> <p>Check diagnostic results to look for any apps that may be consuming large amounts of battery power.</p> <p>If AST 2 is not available, then go to Settings > Battery and look for any apps that may be consuming unusually large amounts of battery power.</p> <p>Are there any apps listed that show unusually high battery usage?</p>	Yes	Go to step 8.	\$(nodeText.yesSymptomCode)	
		No	<p>Unable to duplicate issue.</p> <p>Suggest www.apple.com/batteries as a resource for user to learn about optimizing battery settings.</p>	\$(nodeText.noSymptomCode)	

	Check	Result	Action	Code	Commodity
8.	For each app that shows unusually high battery usage, ask the user how often and how long the app is used.	Yes	Issue resolved. Suggest www.apple.com/batteries as a resource for user to learn about optimizing battery settings.	\$(nodeText.yesSymptomCode)	
	Explain to the user that the battery issue could likely be caused by the user using the app continuously over a long period of time, rather than any fault of the app itself, iOS, or the device.				
	Gain agreement from the user that lengthy app usage is likely to be the cause of the battery life issue, and that there is no service issue with the device itself.	No	Go to step 9.	\$(nodeText.noSymptomCode)	
9.	Does the user agree that the battery life issue is likely caused by lengthy app usage?				
	Follow the steps listed in article HT201252: Restore your iPhone, iPad or iPod touch to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore .	Yes	Go to step 11.	\$(nodeText.yesSymptomCode)	
	Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.	No	Go to step 10.	\$(nodeText.noSymptomCode)	
10.	Did restore complete?				
	Perform steps listed in articles HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod and HT204770: Get help with iOS update and restore errors to attempt to restore the device.	Yes	Go to step 11.	\$(nodeText.yesSymptomCode)	
	Did restore complete?	No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0J	IPHONE

	Check	Result	Action	Code	Commodity
11.	Advise user to set up the device as a new device, following instructions in article HT204686: Erase your iPhone, iPad, iPod touch, or Apple Watch .	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B8A	IPHONE
	Have user use device for several minutes, then allow the device to sleep for several minutes. Note battery level before and after usage to determine if battery life issue persists after restoring the device. Does battery life issue persist?	No	Issue resolved by restoring iOS. Advise the user to follow steps listed in article HT201398: If an app you installed unexpectedly quits, stops responding, or won't open .	\$(nodeText.noSymptomCode)	
12.	Check diagnostic results for a result of "N/A" or blank (no results displayed).	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B8A	IPHONE
	Is the battery condition "N/A" or blank?	No	Go to step 13.	\$(nodeText.noSymptomCode)	
13.	Check diagnostic results for a result of:	"Failed" or "Service"	Go to step 14.	\$(nodeText.yesSymptomCode)	
	<ul style="list-style-type: none"> • "Failed" or "Service" • "Worn" or "Consumed" What is the battery condition result?	"Worn" or "Consumed"	Go to step 16.	\$(nodeText.noSymptomCode)	
14.	Determine if the device has any physical damage that makes this component repair impossible.	Yes	Go to step 15.	\$(nodeText.yesSymptomCode)	
	Is the device eligible for a component repair?	No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B8A	IPHONE

	Check	Result	Action	Code	Commodity
15.	Follow Service Guide steps to open device and attempt battery removal. If you have not yet replaced the battery in the user's device, then answer "Yes" to the question here to begin a repair and order the battery. Warning: If battery tab breaks off or is otherwise not able to be removed, do not use tools to pry up battery. In this situation, answer "No" to the question here. Was battery removal successful without the battery tab breaking?	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options. Run diagnostics to verify issue is resolved.	B8A	IPHONE COMP BATTERY
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B8A	IPHONE
16.	Determine if the device has any physical damage that makes this component repair impossible. Is the device eligible for a component repair?	Yes	Go to step 17.	#{nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B8A	IPHONE
17.	Follow Service Guide steps to open device and attempt battery removal. If you have not yet replaced the battery in the user's device, answer "Yes" to the question here to begin a repair and order the battery. Warning: If battery tab breaks off or is otherwise not able to be removed, do not use tools to pry up battery. In this situation, answer "No" to the question here. Was battery removal successful without the battery tab breaking?	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options. Run diagnostics to verify issue is resolved.	B8A	IPHONE COMP BATTERY
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B8A	IPHONE

Battery Will Not Charge

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">Battery will not charge from USB Power AdapterBattery charge icon does not show fully chargedDevice turns off immediately after disconnecting power adapter	<p>Run the AST 2 MRI diagnostic prior to troubleshooting. Check for any service restrictions in the diagnostic results.</p> <p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <p>If Activation Lock cannot be disabled normally due to the device not turning on, you may need to turn off Activation Lock through iCloud.com.</p> <ol style="list-style-type: none">If the device is unresponsive or if certain controls are not working as expected, then restart the device. If the device remains unresponsive or does not turn on, then reset the device.Check that the correct USB Power Adapter is being used to charge the device. Other power adapters may not provide enough power to charge the device.Plug the device into a known-good 10–12W Apple USB power adapter and Lightning to USB Cable to charge battery. Allow up to ten minutes for the device to respond.Try Lightning connector in both orientations. <p>Important: Battery and charge indicators can fluctuate briefly when you connect device to power or wake it from sleep. If this occurs, wait a few seconds and then check again. Battery percentage can remain at 99 percent with a full charge. This is expected behavior and does not indicate a battery or hardware issue.</p> <ol style="list-style-type: none">Follow suggested steps in HT201569: If your iPhone, iPad, or iPod touch won't charge.Restart device. If unable to restart, try to reset device.If any of the above checks indicate that the device has no power and does not turn on, then go back and select “No Power” from the troubleshooting menu.

Deep Dive

	Check	Result	Action	Code	Commodity
1.	Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.	Yes	Go to step 3.	`\${nodeText.yesSymptomCode}`	
	<p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Is the device in warranty and eligible for warranty service?</p>	No	Go to step 2.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
2.	Determine whether device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI). Is device eligible for out-of-warranty service?	Yes	Go to step 3.	\$(nodeText.yesSymptomCode}	
		No	Return device to user. Due to damage, device is no longer eligible for support.	\$(nodeText.noSymptomCode}	
3.	Closely inspect the area around the Sleep/Wake button on the user's device. If you can see any damage or debris in or around the Sleep/Wake button, answer "Yes" to the question here. If this button is either stuck or cannot be pressed, check for the following: <ul style="list-style-type: none"> Substance causing button to be stuck in one position Debris blocking button so you cannot press button Physically broken button Is the Sleep/Wake button stuck, blocked by debris, or physically broken?	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B91	IPHONE
		No	Go to step 4.	\$(nodeText.noSymptomCode}	
4.	Check that Lightning connector is not obstructed with lint or debris. Attempt to clean any debris in accordance with TP320: iPhone, iPad, iPod: Cleaning Procedures . Are you able to clean the connector?	Yes	Go to step 5.	\$(nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B91	IPHONE
	Plug the device into a known-good 10–12W Apple USB	Battery Trap / Black Screen	Go to step 6.	\$(nodeText.yesSymptomCode}	

	Check	Result	Action	Code	Commodity
6.	Identify if the image seen on the user's device is the battery trap or a black screen. Do you see a battery trap or a black screen?	Battery Trap	Go to step 7.	`\${nodeText.yesSymptomCode}`	
		Black Screen	Go to step 8.	`\${nodeText.noSymptomCode}`	
7.	Allow device to charge for two more minutes, then unplug device. Did the device immediately turn off?	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B83	IPHONE
		No	Go to step 8.	`\${nodeText.noSymptomCode}`	
8.	Charge device for up to 10 minutes, or until the device wakes to a display, whichever comes first. Did the device wake to an iOS screen?	Yes	Go to step 12.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 9.	`\${nodeText.noSymptomCode}`	
9.	1. Open device. 2. Inspect battery connector to ensure battery connector is fully seated onto logic board. Is battery connector fully seated?	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B83	IPHONE
		No	Go to step 10.	`\${nodeText.noSymptomCode}`	
10.	If the battery connector is either disconnected or partially seated, then disconnect battery connector and inspect for damage. Look for damage on both the battery cable and the logic board connectors. Is any damage found on the battery connector?	Yes	This device has unauthorized modifications. Document test failure, process a repair. Return the device to the user.	`\${nodeText.yesSymptomCode}`	
		No	Go to step 11.	`\${nodeText.noSymptomCode}`	

	Check	Result	Action	Code	Commodity
11.	Reconnect battery connector to logic board, ensuring that the connector is fully seated onto logic board.	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B83	IPHONE
	Retest: Allow device to charge for two more minutes, then unplug device.				
	Did the device immediately turn off?	No	Issue resolved.	\$(nodeText.noSymptomCode)	
12.	Check battery icon in the upper right-hand corner of the screen.	Yes	Go to step 15.	\$(nodeText.yesSymptomCode)	
	Is device currently charging?	No	Go to step 13.	\$(nodeText.noSymptomCode)	
13.	Follow the steps listed in article HT201252: Restore your iPhone, iPad or iPod touch to factory settings to restore the device using the latest version of iTunes. If restore fails, attempt recovery mode restore. See article TP337: iOS: Recovery Mode Restore .	Yes	Go to step 15.	\$(nodeText.yesSymptomCode)	
	Warning: This will delete all user data on the device. Verify user has a backup or has given consent before proceeding.	No	Go to step 14.	\$(nodeText.noSymptomCode)	
	Did the restore complete?				
14.		Yes	Go to step 15.	\$(nodeText.yesSymptomCode)	
	Perform the steps listed in articles HT201210: If you see an error when you update or restore your iPhone, iPad, or iPod and HT204770: Get help with iOS update and restore errors to attempt to restore the device.	No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B0J	IPHONE
	Did the restore complete?				

	Check	Result	Action	Code	Commodity
15.	Run AST 2 MRI to verify battery condition.	Yes	Go to step 16.	\${nodeText.yesSymptomCode}	
	Check diagnostic results for a result of: <ul style="list-style-type: none"> • “Passed” or “Normal” Do not restore the user’s device before running AST 2. Is the battery condition “Passed” or “Normal”?	No	Go to step 22.	\${nodeText.noSymptomCode}	
16.	Allow device to charge for two more minutes, then unplug device.	Yes	Go to step 9.	\${nodeText.yesSymptomCode}	
	Did the device immediately turn off?	No	Go to step 17.	\${nodeText.noSymptomCode}	
17.	Test device with user’s Apple accessory, if available. Does user have his or her Apple USB Power Adapter and Lightning to USB Cable?	Yes	Go to step 18.	\${nodeText.yesSymptomCode}	
		No	Issue resolved. Remind the user to verify the power adapter and Lightning to USB cable that is used to charge the device, to ensure both are functional.	\${nodeText.noSymptomCode}	
18.	Connect user’s USB Power Adapter with known-good Apple Lightning to USB cable.	Yes	Go to step 20.	\${nodeText.yesSymptomCode}	
	Does the device charge?	No	Go to step 19.	\${nodeText.noSymptomCode}	

	Check	Result	Action	Code	Commodity
19.	<p>Connect known-good USB Power Adapter with user's Lightning to USB cable.</p> <p>When testing the user's Lightning to USB cable, try connecting the cable in both orientations, and bend the cable to ensure there is no intermittent connection within the cable.</p>	Yes	<p>Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.</p> <p>If the adapter is not made by Apple, refer user to manufacturer for support.</p>	B09	IPHONE ACCESSORY
	Does the device charge?	No	<p>Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.</p>	B83	IPHONE
20.	Inspect the user's Lightning to USB Cable.	Apple	Go to step 21.	\${nodeText.yesSymptomCode}	
	<p>Refer to article HT204566: Identify counterfeit or uncertified Lightning connector accessories to inspect the user's Lightning to USB Cable to ensure it is made by Apple or a certified third party.</p> <p>Is the user's Lightning to USB cable made by Apple or a certified third party?</p>	Third Party	<p>Issue resolved.</p> <p>Refer user to cable manufacturer for support.</p>	\${nodeText.noSymptomCode}	

	Check	Result	Action	Code	Commodity
21.	<p>Connect known-good USB Power Adapter with user's Lightning to USB cable.</p> <p>When testing the user's Lightning to USB cable, try connecting the cable in both orientations, and bend the cable to ensure there is no intermittent connection within the cable.</p> <p>Does the device charge?</p>	Yes	Issue resolved.	#{nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B09	IPHONE ACCESSORY
22.	<p>Check diagnostic results for a result of "N/A" or blank (no results displayed).</p> <p>Is the battery condition "N/A" or blank?</p>	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B8A	IPHONE
		No	Go to step 23.	#{nodeText.noSymptomCode}	
23.	<p>Check diagnostic results for a result of:</p> <ul style="list-style-type: none"> "Failed" or "Service" "Worn" or "Consumed" <p>What is the battery condition result?</p>	"Failed" or "Service"	Go to step 24.	#{nodeText.yesSymptomCode}	
		"Worn" or "Consumed"	Go to step 26.	#{nodeText.noSymptomCode}	
24.	<p>Determine if the device has any physical damage that makes this component repair impossible.</p> <p>Is the device eligible for a component repair?</p>	Yes	Go to step 25.	#{nodeText.yesSymptomCode}	
		No	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B8A	IPHONE

	Check	Result	Action	Code	Commodity
25.	<p>Follow Service Guide steps to open device and attempt battery removal.</p> <p>If you have not yet replaced the battery in the user's device, then answer "Yes" to the question here to begin a repair and order the battery.</p> <p>Warning: If battery tab breaks off or is otherwise not able to be removed, then do not use tools to pry up battery. In this situation, answer "No" to the question here.</p> <p>Was battery removal successful without the battery tab breaking?</p>	Yes	<p>Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.</p> <p>Run diagnostics to verify issue is resolved.</p>	B8A	IPHONE COMP BATTERY
		No	<p>Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.</p>	B8A	IPHONE
26.	<p>Determine if the device has any physical damage that makes this component repair impossible.</p> <p>Is the device eligible for a component repair?</p>	Yes	Go to step 27.	\${nodeText.yesSymptomCode}	
		No	<p>Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.</p>	B8A	IPHONE

	Check	Result	Action	Code	Commodity
27.	<p>Follow Service Guide steps to open device and attempt battery removal.</p> <p>If you have not yet replaced the battery in the user's device, then answer "Yes" to the question here to begin a repair and order the battery.</p> <p>Warning: If battery tab breaks off or is otherwise not able to be removed, then do not use tools to pry up battery. In this situation, answer "No" to the question here.</p>	Yes	<p>Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.</p> <p>Run diagnostics to verify issue is resolved.</p>	B8A	IPHONE COMP BATTERY
	<p>Was battery removal successful without the battery tab breaking?</p>	No	<p>Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.</p>	B8A	IPHONE

No Power

Unlikely causes:

There are no unlikely causes for this issue.

Quick Check

Symptoms	Quick Check
<ul style="list-style-type: none">Will not turn on	<p>Important: Before servicing a device, ensure customer has disabled Find My iPhone in Settings. For more information, refer to article HT201365: Find My iPhone Activation Lock.</p> <p>If Activation Lock cannot be disabled normally due to the device not turning on, you may need to turn off Activation Lock through iCloud.com.</p> <ol style="list-style-type: none">1. Connect the device using a known-good Lightning cable to a known-good computer running the latest version of iTunes. If the device is recognized in iTunes, then the device has power. Restore device if prompted.2. Plug the device into a known-good 10–12W Apple USB power adapter that is connected to AC power until any image appears on the screen, or for up to 10 minutes, whichever comes first. If the device charges or any image appears on screen, then the device has power. If the device does not charge or no image appears on screen after 10 minutes of charging, then continue to the next step.3. Perform a two-finger reset by holding both the Sleep/Wake and Home buttons for at least 10 seconds. If any image appears on screen, then the device has power.4. Reconnect the device using a known-good Lightning cable to a known-good computer running the latest version of iTunes. If the device is recognized in iTunes, then the device has power. Restore device if prompted. <p>Note: If any of the above checks indicate that the device has power and turns on, then go back and select another troubleshooting flow.</p>

Deep Dive

	Check	Result	Action	Code	Commodity
1.	<p>Ensure all quick checks have been completed prior to performing the following deep dive steps.</p> <p>Use the Visual/Mechanical Inspection (VMI) Guide to identify conditions that affect warranty and service eligibility.</p> <p>Important: Only damage described in the green section of the VMI is eligible for warranty service. Damage described in either the yellow or red sections of the VMI is not eligible for warranty service.</p> <p>Is the device in warranty and eligible for warranty service?</p>	Yes	Go to step 3.	\${nodeText.yesSymptomCode}	
		No	Go to step 2.	\${nodeText.noSymptomCode}	
2.	<p>Determine whether the device is eligible for out-of-warranty service (yellow section of VMI) or is ineligible for service (red section of VMI).</p> <p>Is the device eligible for out-of-warranty service?</p>	Yes	Go to step 3.	\${nodeText.yesSymptomCode}	
		No	Return device to user. Due to damage, the device is no longer eligible for support.	\${nodeText.noSymptomCode}	
3.	<p>Complete all steps in the internal inspection sections of the Visual/Mechanical Inspection (VMI) Guide.</p> <p>Did all tests in this procedure pass on the user's device?</p>	Yes	Service required. Proceed with repair creation to see available options. If available, choose a modular repair or mail-in repair. Perform a whole unit replacement only if there are no other options.	B83	IPHONE
		No	This device has unauthorized modifications. Document test failure, process a repair, use part number 011-0659 Micro-Inspection 1. Return the device to the user.	\${nodeText.noSymptomCode}	

Take Apart General Information

Before You Begin

- **Important:** Refer to the [Visual/Mechanical Inspection \(VMI\)](#) guidelines to determine whether the device has any **accidental damage**. Check for Liquid Contact Indicator (LCI) activation before opening the device. One external LCI is located on the underside of the display and viewable by removing the SIM tray. Refer to article [TP881: Internal Checks](#) for LCI locations.
- Remove any cases or screen protectors, as they may inhibit proper testing.
- Verify the user-reported symptom(s) and identify the correct part(s) needed for repair.
- Ensure that the device is turned off (by using the red slider).

Electrostatic Discharge (ESD) Precautions

Proper ESD precautions must always be used when opening an iPhone. Make sure you are working on a properly grounded ESD-safe mat and are wearing a properly connected ESD-safe wrist strap.

For more information about ESD, refer to:

- [OP100: Electrostatic Discharge Precautions and Myths](#)
- [ATLAS: ESD Precautions](#)

Required Tools

The following tools are required to service iPhone 5, 5c, 5s, and SE:

- ESD-safe brush (922-9918)
- ESD-safe tweezers
- ESD-safe wrist strap
- ESD-safe workstation
- iPhone 5/5s Repair Tray (923-0315), compatible with iPhone SE
- iPhone 5c Repair Tray* (923-0518)
- iPhone Torque Driver (blue), 0.65 kg-fcm (923-0448)
- iPhone Torque Driver Kit (923-0248) includes:
 - iPhone Torque Driver (black), 0.35 kg-fcm (923-0248)
 - iPhone Torx Security Bit (923-0247)
 - JCIS Bit (923-0246) for cross-head screws
- Micro-fiber polishing cloth
- Motorola DS4208 Scanner (923-0445) for serial bar code
- Nylon Probe Tool (black stick) (922-5065)
- Packing tape (provides a smooth surface for removal of the display)
- SIM Removal Tool (922-8417) or paperclip (size #1)
- Universal Display Removal Fixture (923-00066)
- Universal iPhone Battery Fixture (923-00065)
- Wire cutters or small scissors

***Note:** The iPhone 5c Repair Tray is marked with concentric circles on one corner. The iPhone 5/5s Repair Tray is plain with no shape symbol.



Device Safety

Battery Handling

iPad, iPhone, iPod, Apple Watch include a lithium-polymer rechargeable battery. The battery, when used and repaired under reasonable conditions and according to instructions, should not present a health hazard. The contents of the battery are encapsulated. However, if the contents are released or damaged, they may present potential health and safety hazards. Avoid exposure to heat and open flame. Do not puncture, deform, crush, or incinerate, as a thermal runaway reaction and excessive heating may result. Refer to article [OP24: Safely handling lithium batteries and lithium battery-powered devices](#). For workstation setup and special battery handling tools refer to the Workstation and Special Tools section of article [OP685: About embedded battery safety](#).



Warning: If the battery is dented, punctured, swollen, or otherwise damaged, then stop the repair. Do not remove the battery from the device. Replace the whole unit.

For further instructions about swollen batteries, including warranty coverage, refer to article [HT204762: Enclosure separation due to expanded battery](#).

Warning: Do not reuse or reinstall a loose battery or a battery that has been removed. Replace it with a new battery. If a new battery is unavailable, replace the whole unit.

Thermal Runaway Events Involving Lithium-Ion (LiO) / Lithium-Polymer Batteries

The following statements are intended for guidance purposes only. Only properly trained and equipped personnel should respond to a thermal runaway event.

The most effective way to prevent a lithium-ion/lithium-polymer battery thermal event is to discharge the battery before opening the device or working on or near the battery. (A battery with a charge of less than 25% will be unable to produce a thermal event.)

If a battery begins to emit smoke or sparks, or if you hear hissing or popping sounds, the battery is most likely undergoing a thermal runaway. The most effective way to stop the reaction is to smother it IMMEDIATELY with plenty of clean, dry sand. As soon as you notice that a battery thermal event is underway, pour all of the sand, all at once, over the battery to cover it completely. This will smother the reaction and limit the amount of smoke produced.

Do not attempt to use water or an ABC/CO2 fire extinguisher on a thermal runaway battery, as these will not be effective at stopping the reaction and will create a bigger mess to clean up.

Cleanup

Sweep up sand (if used), remove any pieces of debris, and return the remaining clean sand to the quick-pour container for future use. Add more sand to the container from supplementary sand containers as needed.

Wipe down the workstation with water. Use an ESD mat cleaning solution on the affected area.

Return batteries (including any debris removed from the sand, if it was used) according to Apple Recycles and scrap procedures.

Personal Protection

Respiratory Protection	Not necessary under normal conditions.
Eye/Face Protection	Always wear safety glasses with side shields when performing repair work involving batteries, broken glass, or any task where eye hazards could be present.
Gloves	Not necessary under normal conditions. Use disposable latex or nitrile gloves if handling an open or leaking battery.

First Aid Measures

Inhalation	The contents of an open battery or the smoke from a thermal runaway event may cause respiratory irritation. Leave the area if necessary for comfort. Seek fresh air and medical attention if feeling unwell.
Ingestion	Ingestion of a lithium-ion battery is highly unlikely as the contents are mostly solid, and any free liquid (ester-based electrolyte) that might drip out of a damaged battery is limited to a few drops. However, care should be taken not to touch fingers to mouth while handling a damaged battery to avoid any ingestion of contents. Do not induce vomiting. Wash out mouth with water. Get medical attention following exposure or if feeling unwell.
Skin Contact	The contents of an open battery may cause skin irritation. Flush contaminated skin with plenty of water. Remove any contaminated clothing. Continue to rinse for at least 15 minutes. Get medical attention. Wash clothing before reuse.
Eye Contact	The contents of an open battery may cause eye irritation. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if irritation persists.

Disclaimer: The above information is provided for your information only. The information and recommendations set forth above are made in good faith and are believed to be accurate as of the date of preparation. Apple Inc. makes no warranty, either expressed or implied, with respect to this information and disclaims all liability from reliance on it.

Broken Glass Handling

iPad, iPhone, iPod, Apple Watch displays and iPhone 4, 4s, 8, 8 Plus, and X back covers are made of glass. This glass could break if the device is dropped on a hard surface, receives a substantial impact, or is crushed, bent, or deformed. If the glass chips or cracks, do not attempt to remove the broken glass. Follow these steps:

- If the display glass is broken, put on safety glasses and cut-resistant gloves.
- Use a vacuum to remove any shards present on the work surface or the display.
- Affix a protective display cover or packing tape before removal to prevent injury or scattering of glass.
- Do not let the display cover or tape go over the edge of the display.
- For repair options, refer to the appropriate Visual/Mechanical Inspection (VMI) Guide:
 - [VMI Guide for Apple Watch](#)
 - [VMI Guide for iPad](#)
 - [VMI Guide for iPhone 4 and 4s](#)
 - [VMI Guide for iPhone 5, 5c, 5s, and SE](#)
 - [VMI Guide for iPhone 6, 6 Plus, 6s, 6s Plus, 7, 7 Plus, 8, 8 Plus](#)
 - [VMI Guide for iPhone X](#)
 - [VMI Guide for iPod touch \(5th and 6th generation\)](#)
 - [VMI Guide for iPod nano \(6th and 7th generation\)](#)
 - [VMI Guide for iPod \(all other models\)](#)

Recent changes to this procedure:

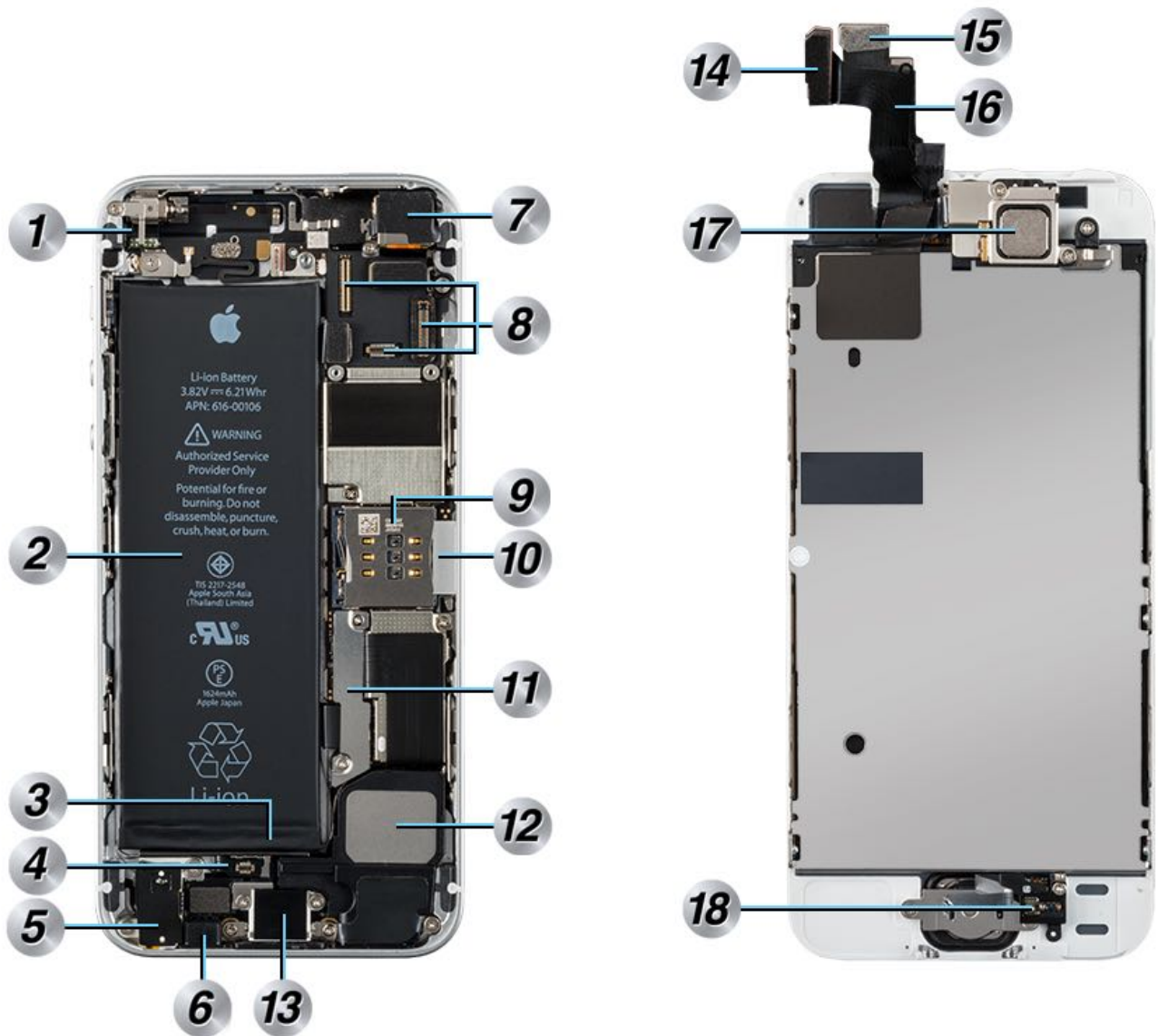
03 NOV 2017: Added iPhone X. Updated Eye/Face Protection section.

22 SEP 2017: Added iPhone 8 and 8 Plus.

06 APR 2017: Added iPad, iPod, and Apple Watch. Added links to OP24 and OP685 to the Battery Handling section.

Internal View, Parts List, Screw Diagram

Internal View of iPhone SE



1. Vibe motor
2. Battery
3. Battery adhesive tab
4. Home button connector
5. Headphone jack
6. Microphone
7. Camera
8. Display connections on logic board
9. Logic board serial number
10. SIM tray
11. Battery cowling
12. Speaker
13. Lightning connector
14. Camera/receiver/ALS connector
15. Multi-Touch connector
16. Display connector
17. Receiver
18. Home button assembly

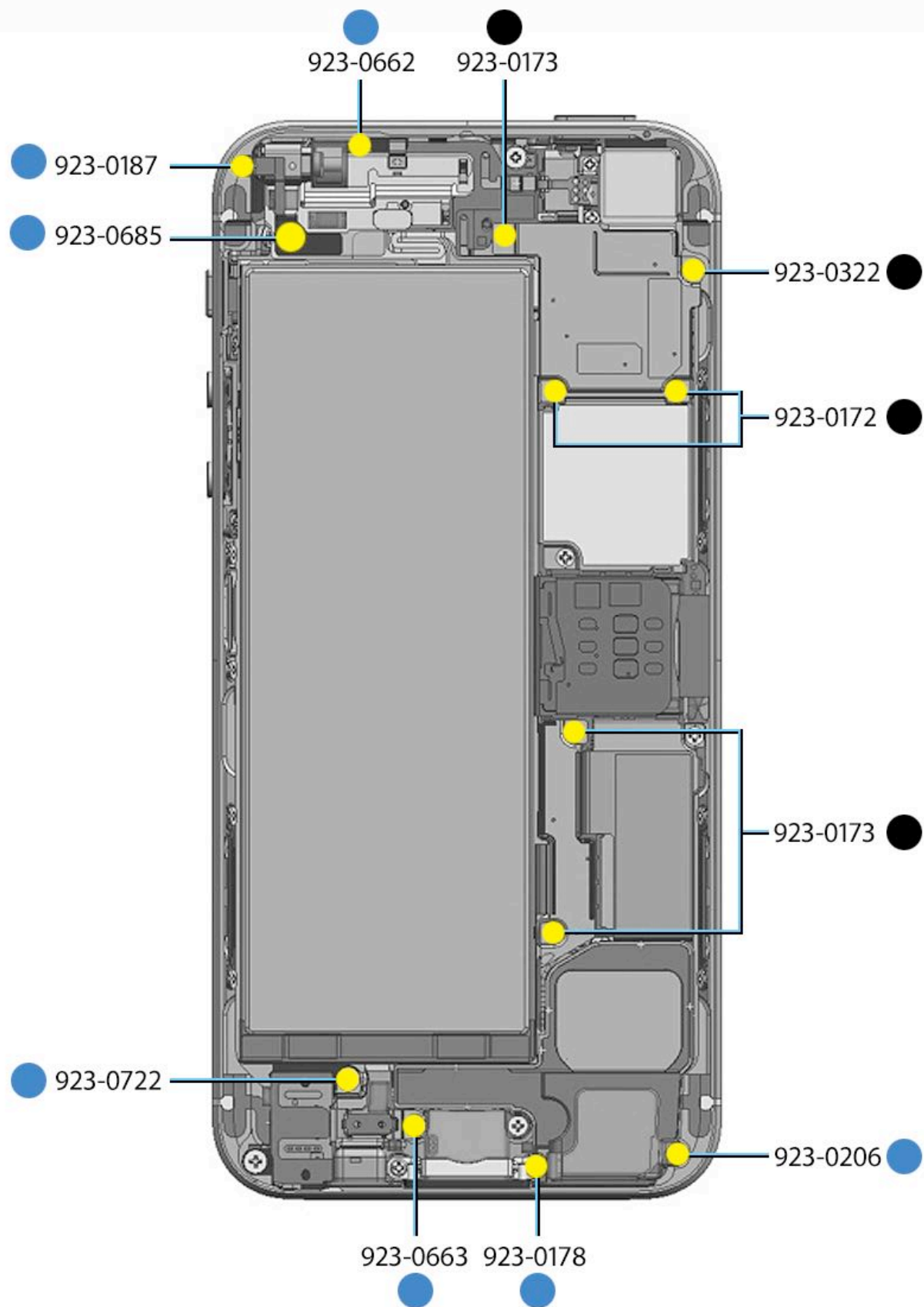
Parts List

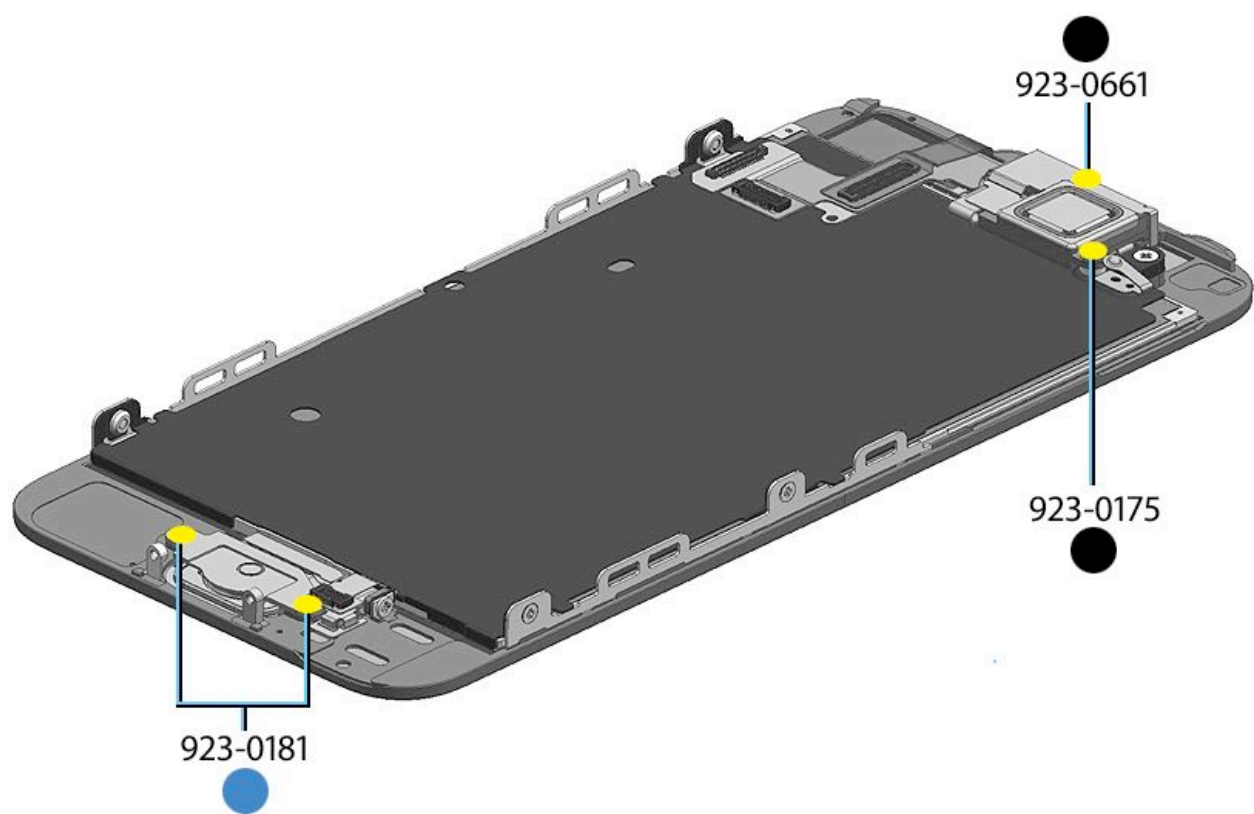
Note: All screws come in quantities of 200.

Description	Part Number	Kit Contents (order screws separately)	Screws
Battery Adhesive	923-0575	10 battery adhesive strips	
Battery Connector Cowling	923-0659	10 battery connector cowlings	923-0173 1 top, 1 bottom
Battery Kit	661-04479	1 battery 1 battery adhesive pack	
Camera	661-04478	1 camera	
Home Button Flex Cowling	923-0743	10 Home button flex cowlings	
Display Cowling	923-01229	10 display cowlings	923-0322 1 unmagnetized, upper right 923-0172 1 lower left, 1 lower right 923-0173 1 upper left
Receiver	923-0654	1 receiver module	923-0661 1 long, upper left 923-0175 1 short, lower right
Receiver Cowling	923-0694	10 receiver cowlings	923-0661 1 long, upper left 923-0175 1 short, lower right
Security Screws			923-0218 2 space gray/silver 923-00874 2 gold 923-00875 2 rose gold
SIM Tray	923-00857 (space gray) 923-0573 (silver) 923-00872 (gold) 923-00873 (rose gold)	1 SIM tray	
Speaker	923-0653	1 speaker module	923-0722 1 left 923-0663 1 middle left 923-0178 1 middle right 923-0206 1 right
Vibe Motor	923-0655	1 vibe motor	923-0187 1 upper left 923-0685 1 bottom right, large head 923-0662 1 perpendicular to band

Screw Diagram

Use iPhone Torque Driver (black) for screws marked with a black dot.
Use iPhone Torque Driver (blue) for screws marked with a blue dot.





iPhone 5s and SE Repair Video List

In these videos, learn how to properly replace internal components in the course of a repair.

- [iPhone 5s and SE Open Device Video](#)
- [iPhone 5s and SE Receiver Replacement Video](#)
- [iPhone 5s and SE Vibe Motor Replacement Video](#)
- [iPhone 5s and SE iSight Camera Replacement Video](#)
- [iPhone 5s and SE Battery Replacement Video](#)
- [iPhone 5s and SE Speaker Replacement Video](#)

For issues with video content or playback, email the **AppleCare Media Production** team at **servicevideos@group.apple.com**.

Note: You may not receive a response, but all comments will be reviewed and investigated as needed.

SIM Tray

First Steps

- Power off iPhone

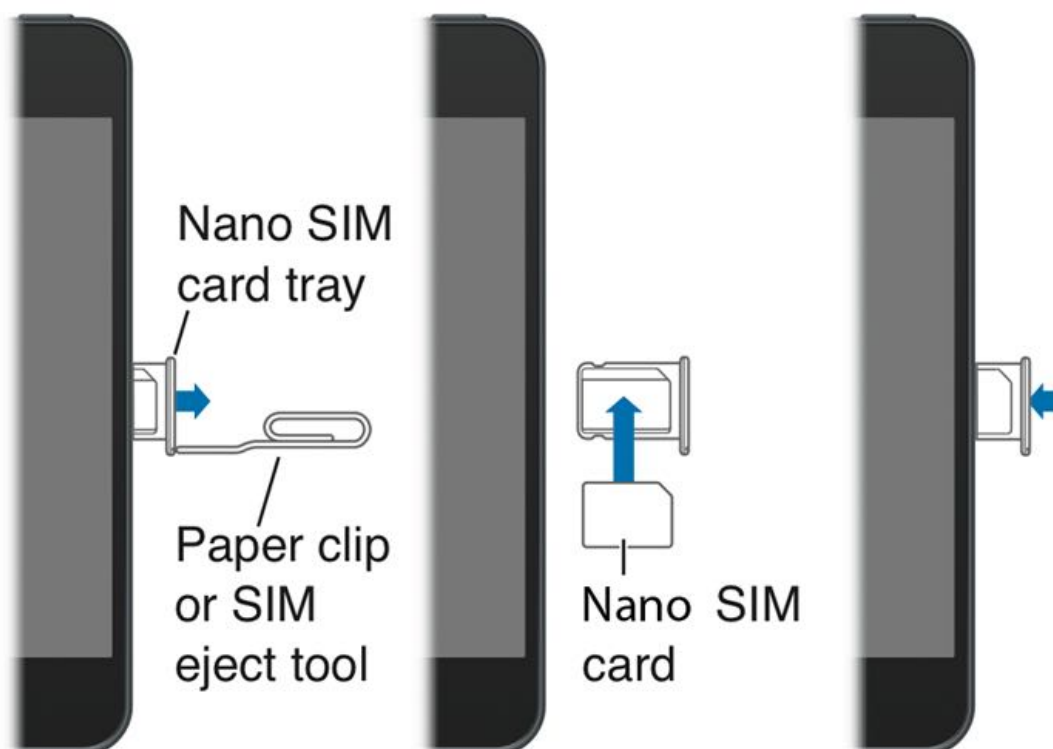


Tools

- SIM Removal Tool (922-8417) or paperclip (size #1)

Steps For Removal

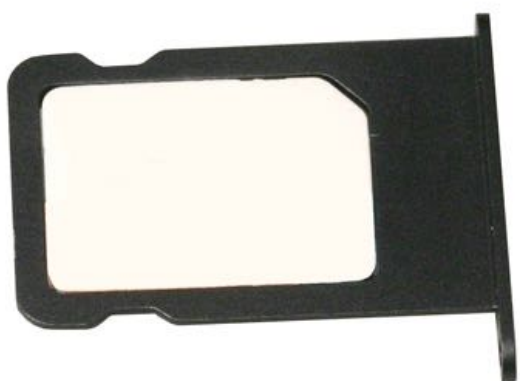
1. Insert the end of a SIM Removal Tool (922-8417) or a small thin paper clip (size #1) into the hole on the SIM tray.
2. Push the tool straight in firmly until tray pops out.



Steps For Reassembly

Note orientation of the tray and SIM card prior to inserting into iPhone.

Caution: Do not force the SIM tray into position, which could cause internal damage to iPhone.



Open Device

First Steps

- Refer to the [Visual/Mechanical Inspection \(VMI\) Guide](#) to determine any accidental damage.
- Remove any cases or screen protectors.
- Follow electrostatic discharge (ESD) precautions.
- Turn off the iPhone.

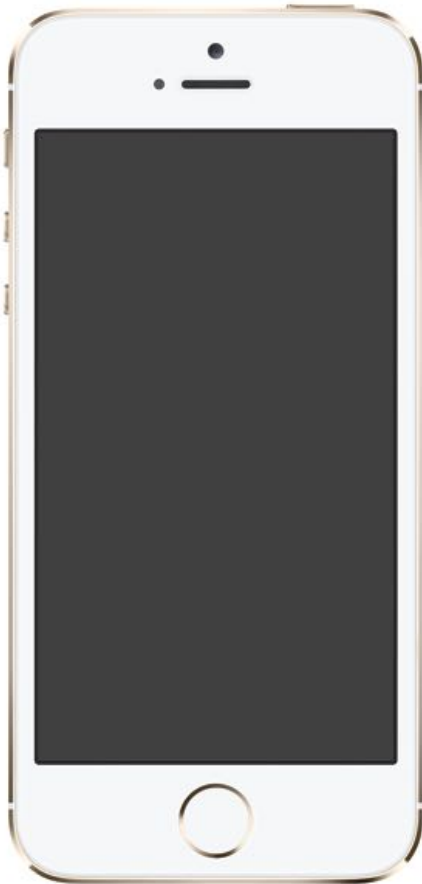


Warning: If the enclosure is separated due to a swollen battery, then **stop the repair**. Do not remove the battery from the device. Replace the whole unit.

Refer to articles [TP328: iPhone Safety](#) and [HT204762: Enclosure separation due to expanded battery](#).

Warning: If the display glass is broken, then put on safety glasses and material handling gloves. Use a vacuum cleaner to remove any shards present on workspace or display. Affix a protective display cover or packing tape before removal to prevent injury or scattering of glass. Do not let the display cover or tape go over the edge of the display.

For video instruction, refer to article [SV229: iPhone 5s and SE Open Device Video](#).



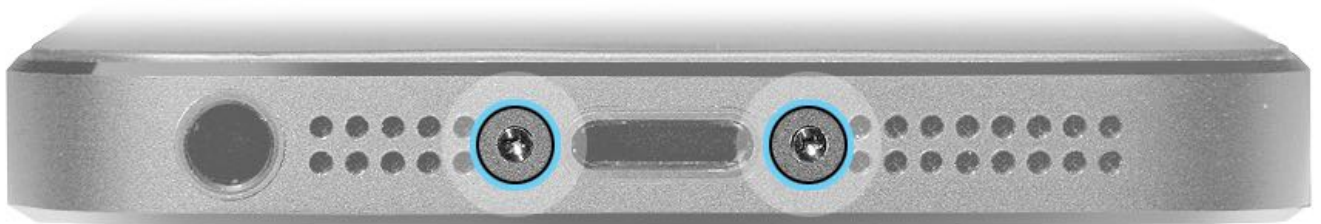
Tools

1. iPhone Torque Driver (black) (923-0248)
2. Security Bit (923-0247)
3. Nylon Probe Tool (black stick, 922-5065)
4. iPhone 5/5s Repair Tray (923-0315)
5. Universal Display Removal Fixture (923-00066)



Steps For Removal

1. Remove and discard two security screws on either side of the Lightning connector using iPhone Torque Driver (black) and Security Bit.



2. Place iPhone on lower suction cups of Universal Display Removal Fixture. Press iPhone down to secure lower suction cups.

Caution: Use only the Universal Display Removal Fixture with the iPhone 5s and SE. Other fixtures may cause damage to the home button flex cable.

3. Press lever down to secure upper suction cups to display glass.

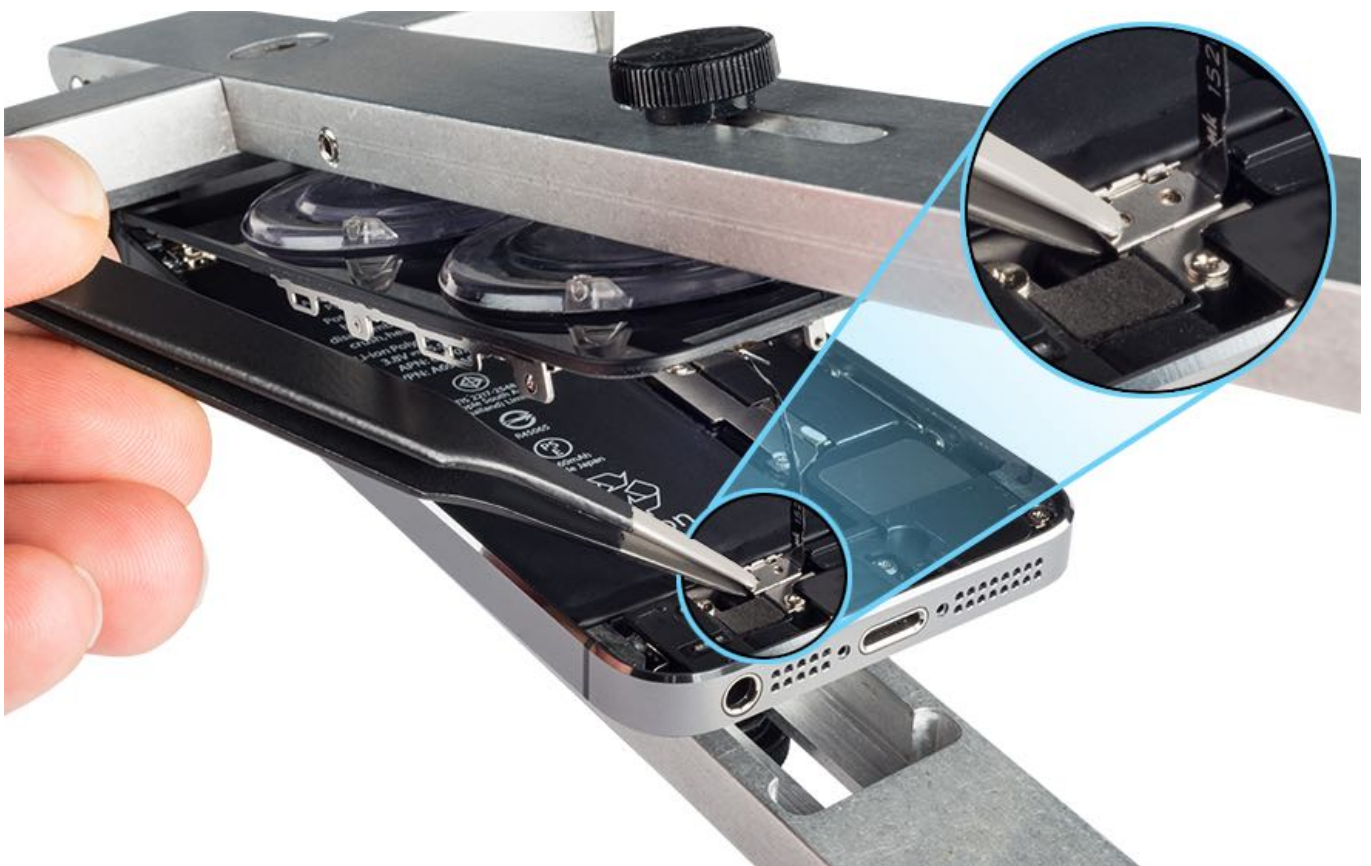


4. Slowly lift the metal bar with firm pressure to unseat the display. Do not use excessive force.

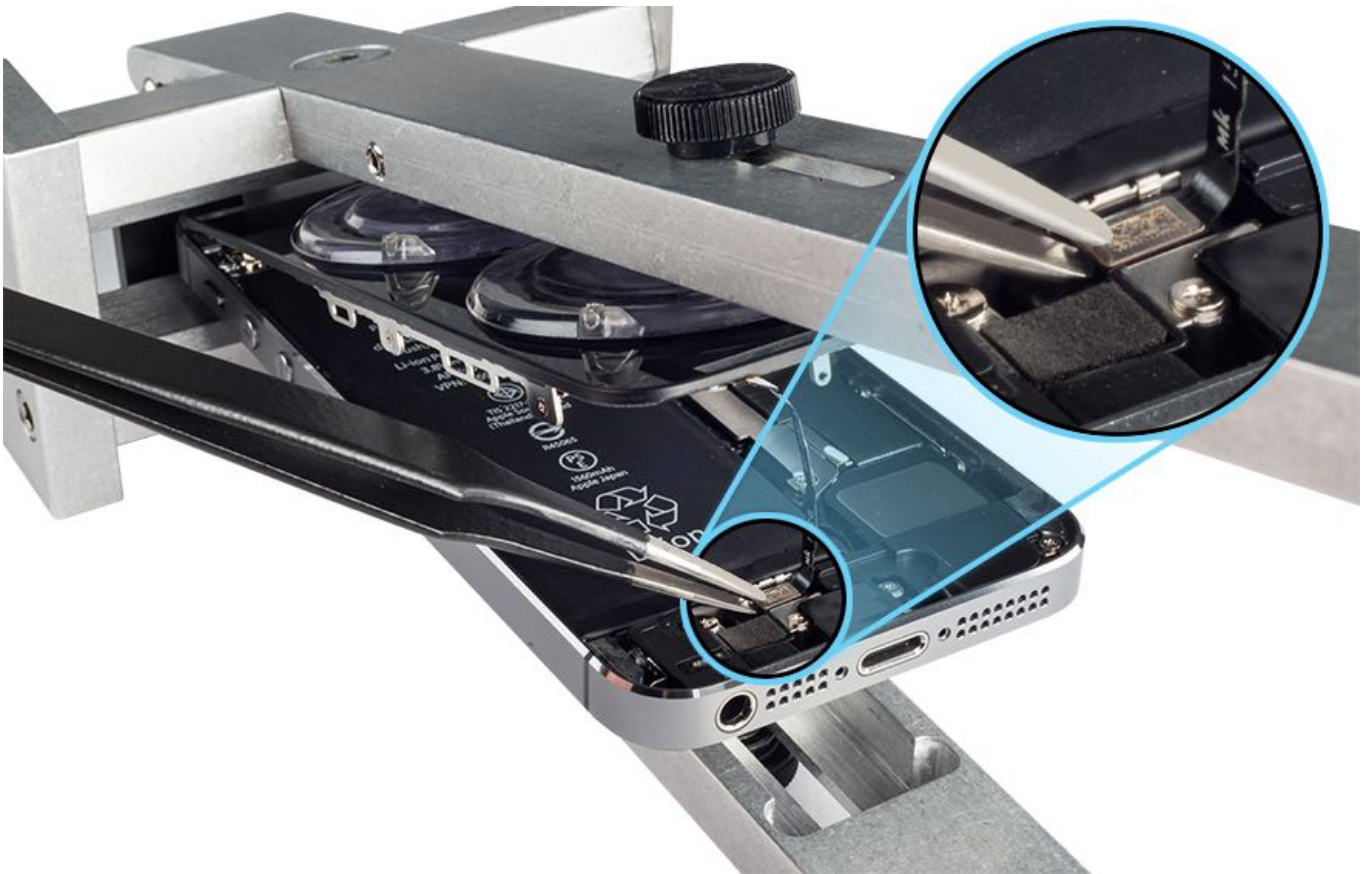
5. Loosen suction cups to release display.



6. Remove home button flex cowl with ESD-safe tweezers.



7. Disconnect home button flex connector with ESD-safe tweezers.



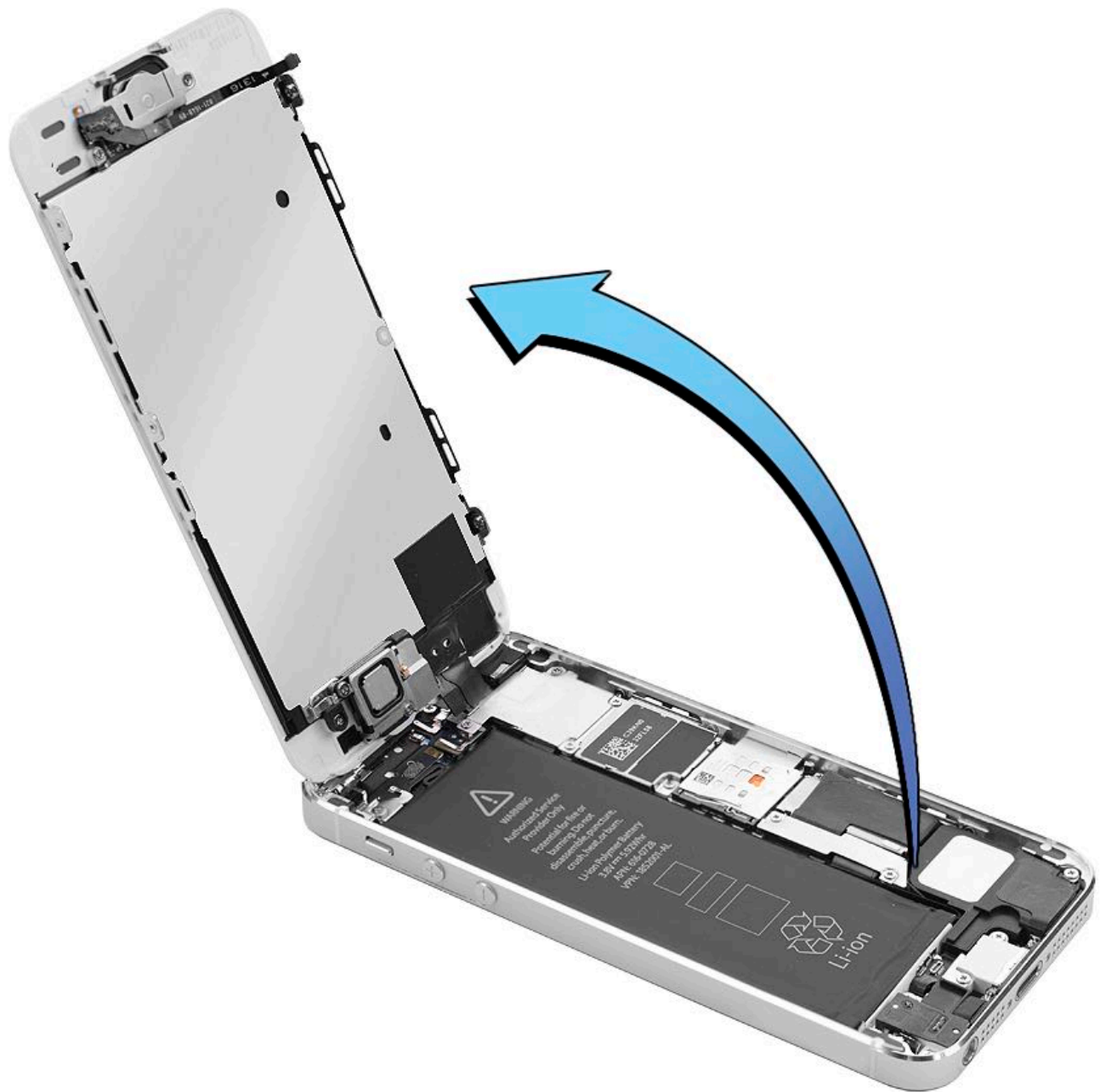
8. Carefully tilt display up.

Caution: iSight camera is located above display cowling in enclosure. Slightly lift display up while tilting open to avoid moving iSight camera.

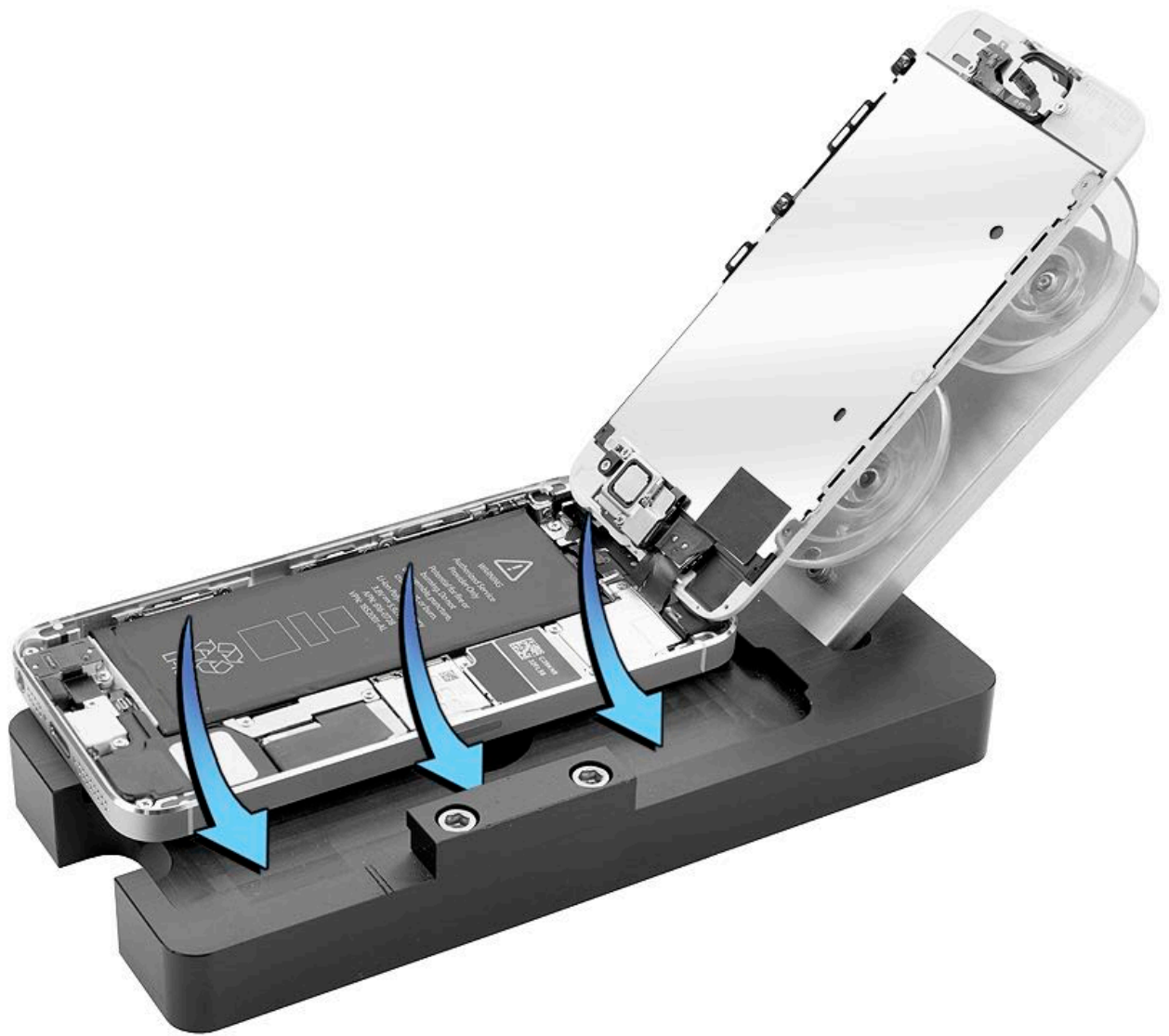


Warning: If the battery is dented, punctured, swollen, or otherwise damaged, then **stop the repair**. Do not remove the battery from the device. Reassemble and replace the whole unit.

Refer to articles [TP328: iPhone Safety](#) and [HT204762: Enclosure separation due to expanded battery](#).



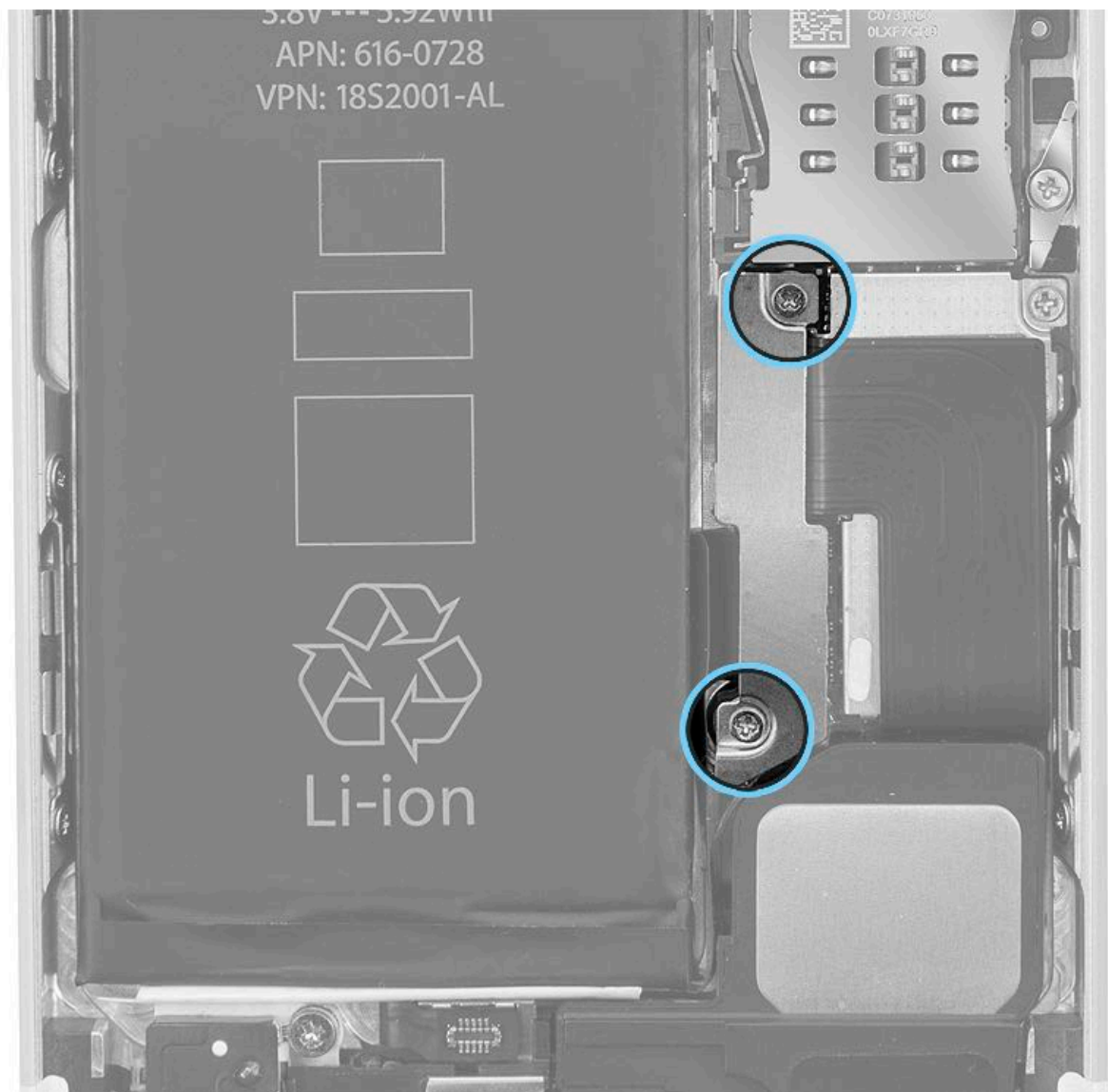
9. Insert iPhone into iPhone 5/5s Repair Tray. Secure display to suction cups.



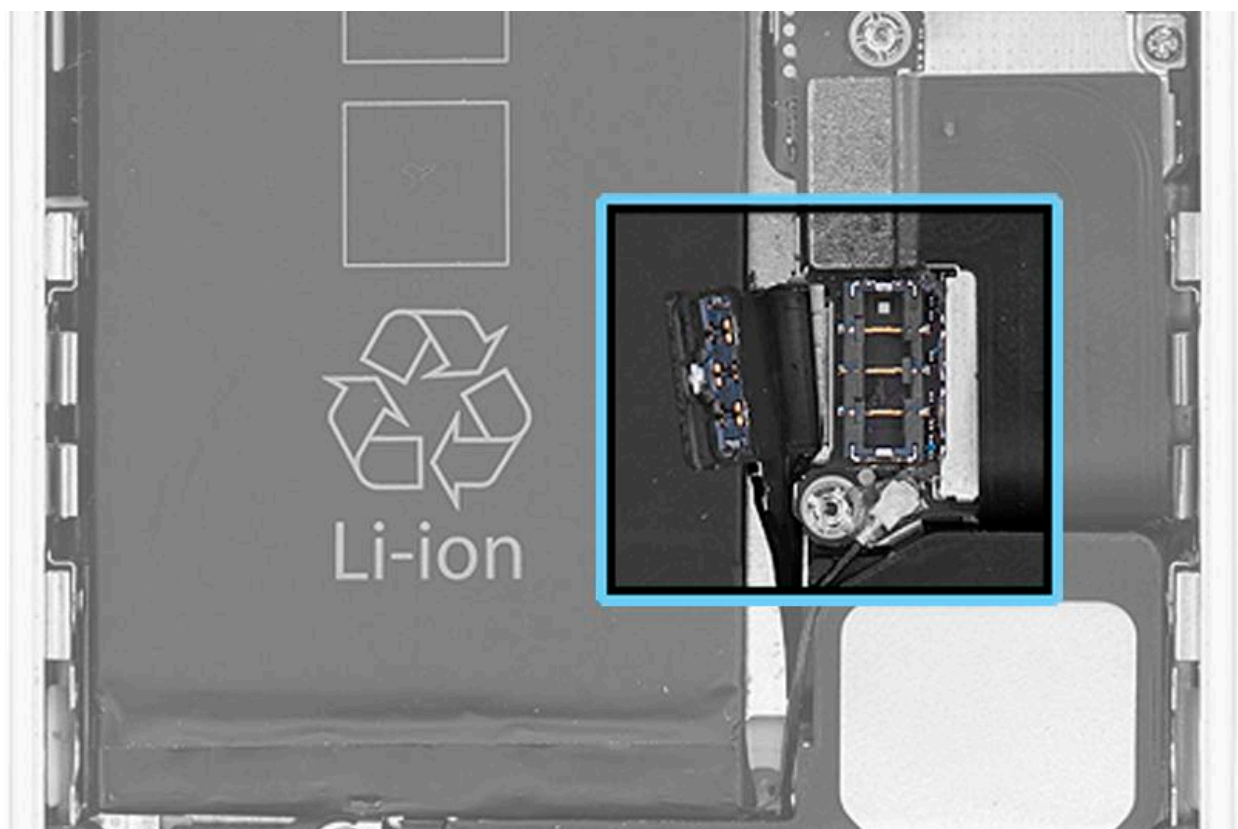
10. Remove and discard two cross-head screws from battery connector cowling using iPhone torque driver (black) and JCIS bit.

11. Remove battery connector cowling. Save for reuse.



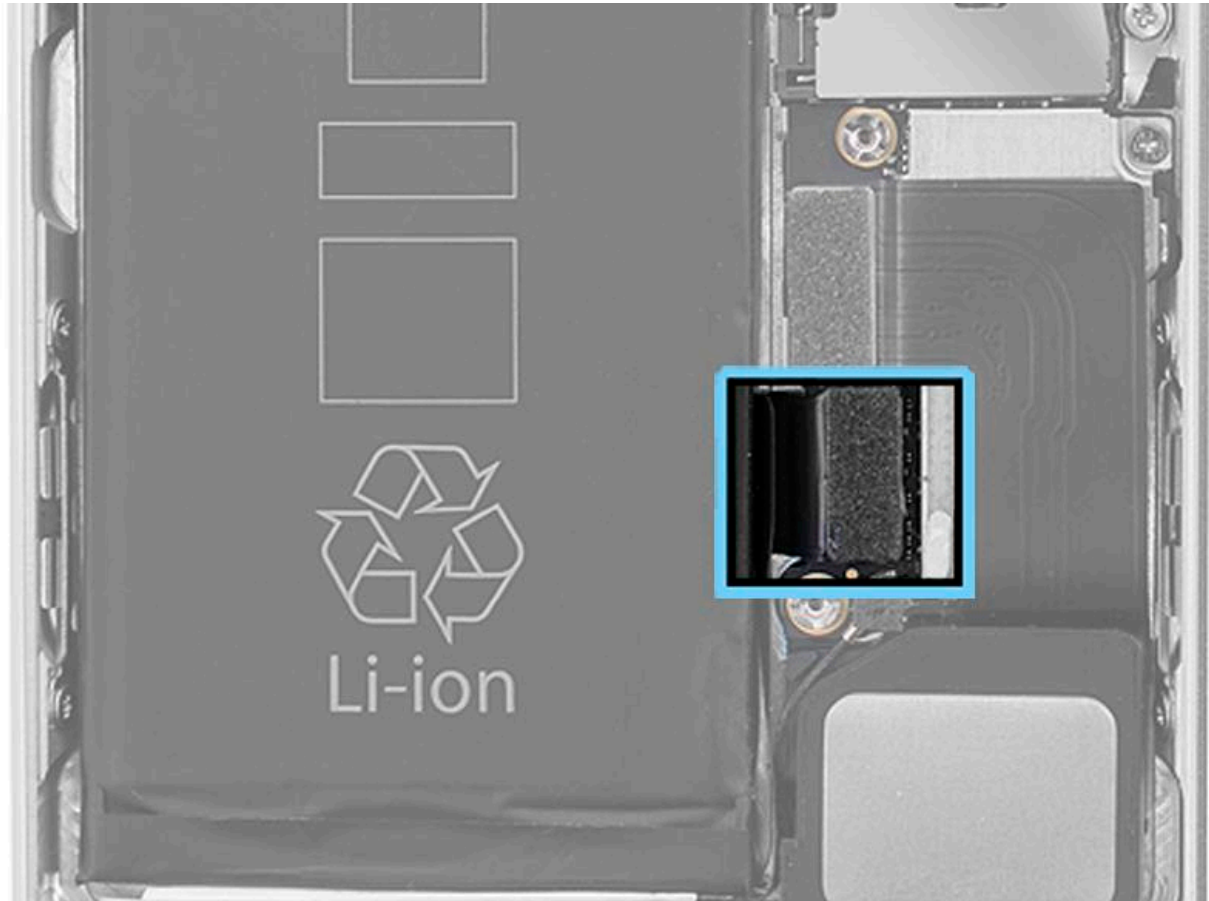


12. Use a black stick to disconnect battery connector from logic board.



Steps For Reassembly

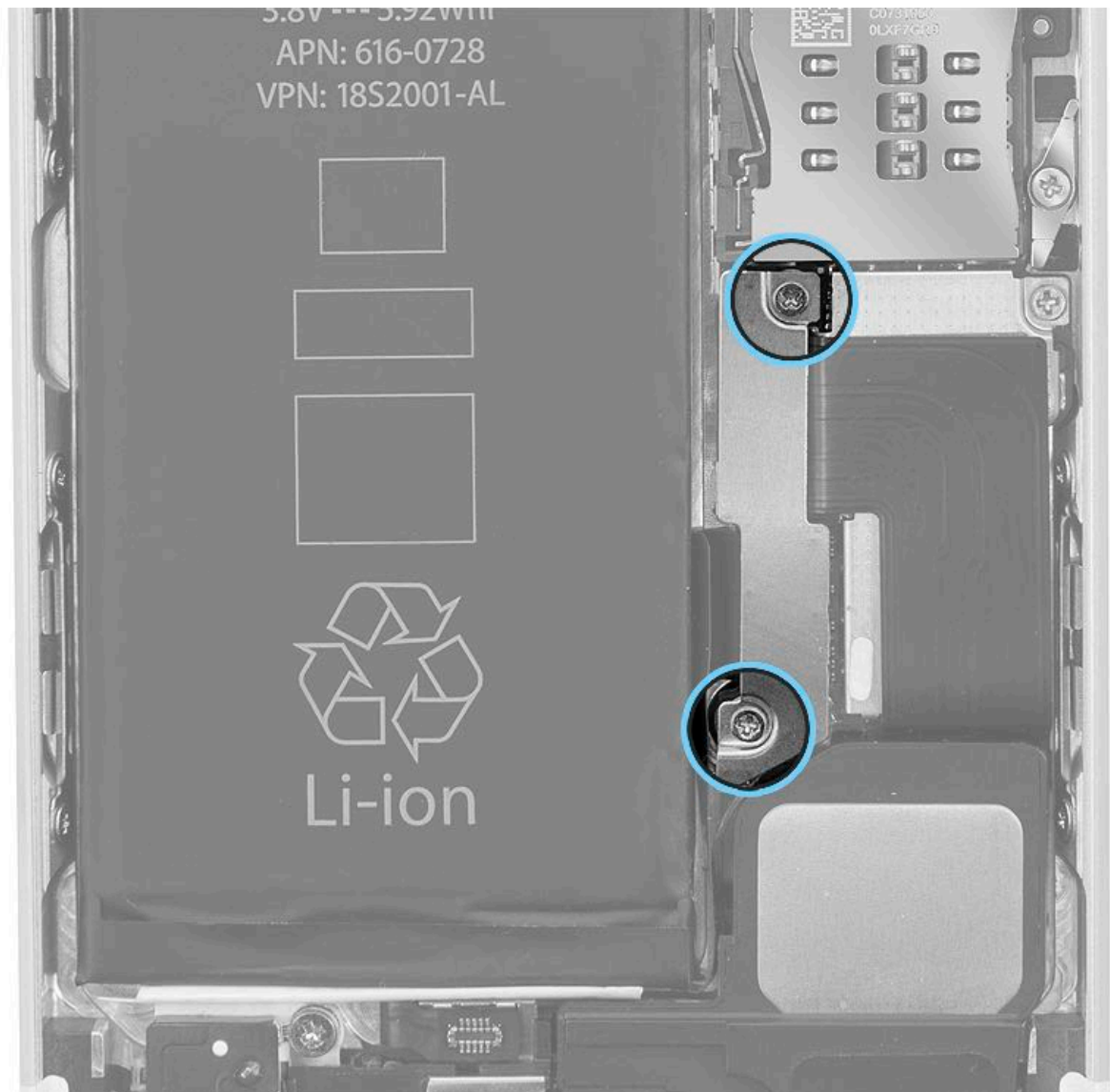
1. Press battery connector down onto logic board.



2. Place battery connector cowling (923-0659) over battery connector.



3. Install two **new** cross-head screws (923-0173) into battery connector cowling using iPhone torque driver (black) and JCIS bit. Do not reuse old screws.



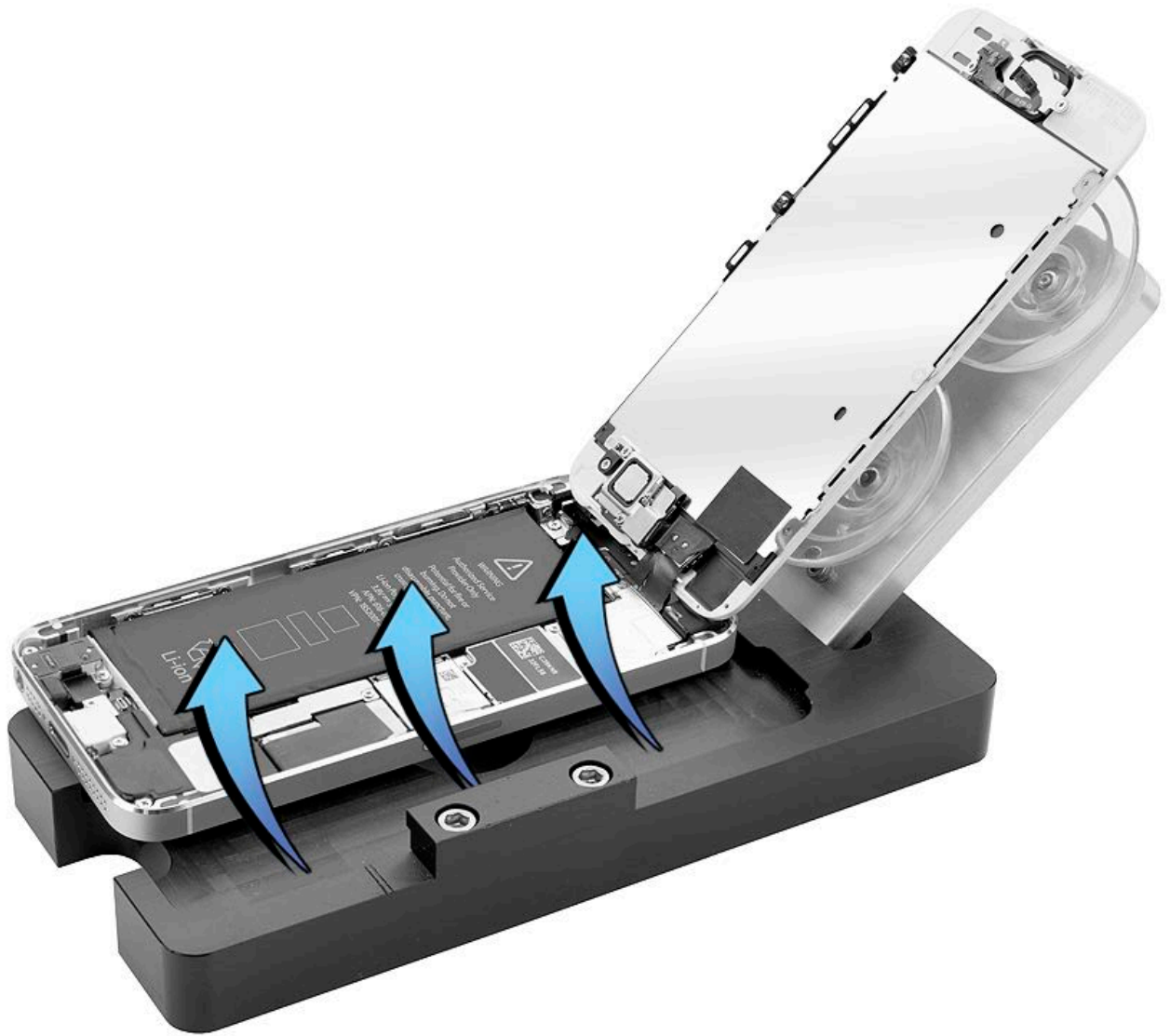
4. Gently loosen display from suction cups by pulling each suction cup tab.



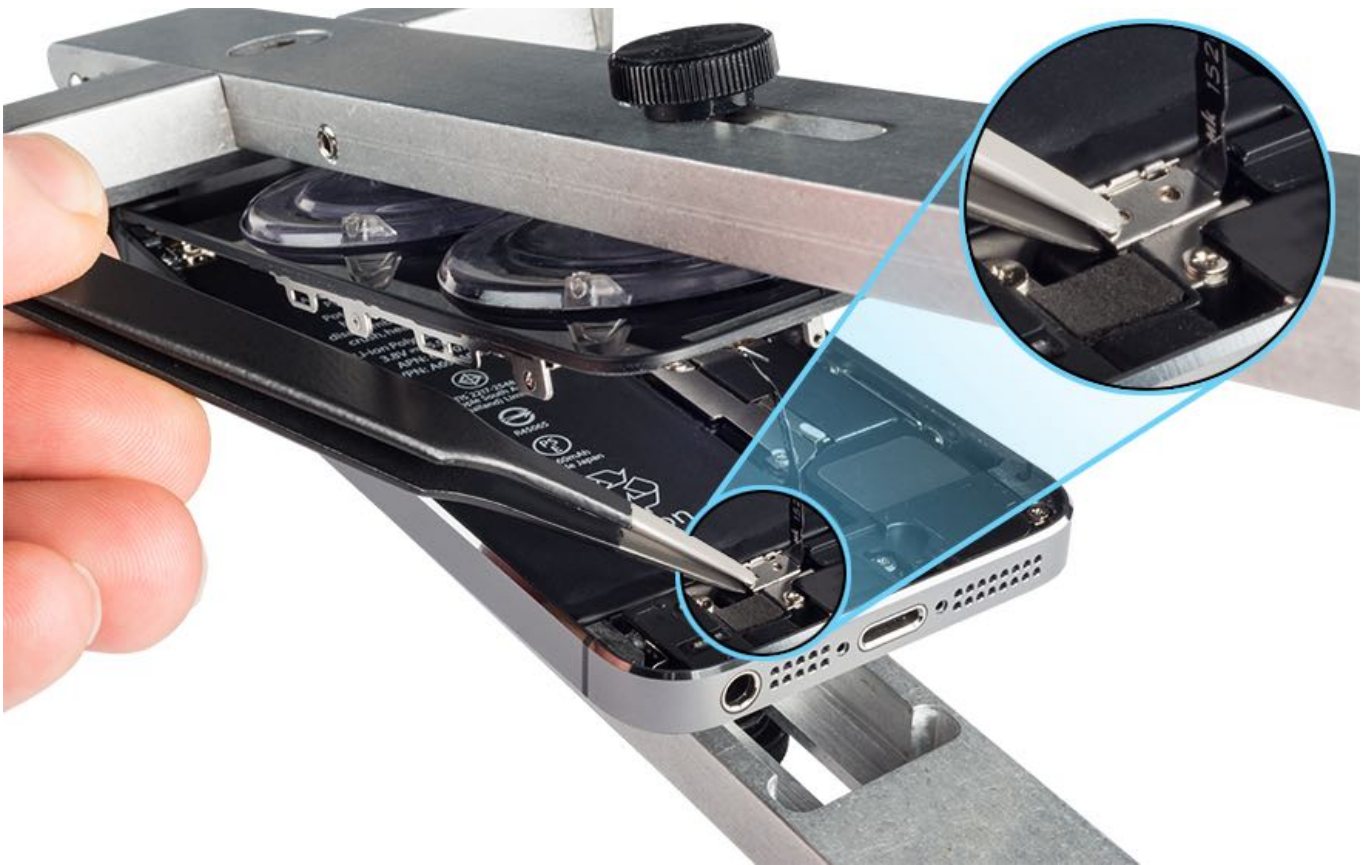
Warning: If the battery is dented, punctured, swollen, or otherwise damaged, then **stop the repair**. Do not remove the battery from the device. Reassemble and replace the whole unit.

Refer to articles [TP328: iPhone Safety](#) and [HT204762: Enclosure separation due to expanded battery](#).

5. Remove iPhone from tray.



6. Align top of display into top of enclosure.
7. Secure iPhone in Universal Display Removal Fixture.
8. Connect home button flex using black stick.
9. Place home button flex cowling with ESD-safe tweezers.



10. Tilt display down into enclosure until an audible click is heard.



11. Loosen suction cups to release iPhone.

12. Install two **new** security screws on either side of the Lightning connector using iPhone Torque Driver (black) and Security Bit.

- 923-0218, space gray and silver
- 923-0664, gold (iPhone 5s)
- 923-00874, gold (iPhone SE)
- 923-00875, rose gold

13. **Important:** Check iPhone operation with steps in [TP1045: Functional Test](#).

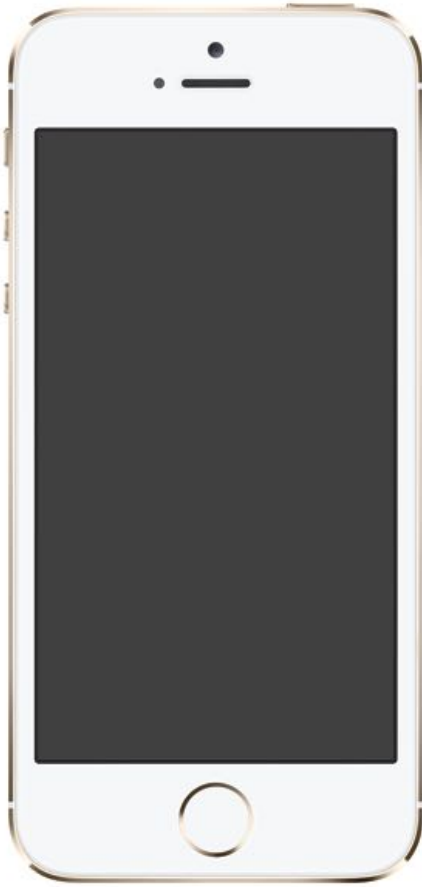


Disconnect Display Assembly

First Steps

- [Open Device](#)

Important: This procedure should only be performed by Apple-certified technicians.



Tools

1. iPhone Torque Driver (black) (923-0248)
2. JCIS Bit (923-0246) for cross-head screws
3. ESD-safe tweezers
4. Nylon Probe Tool (black stick, 922-5065)



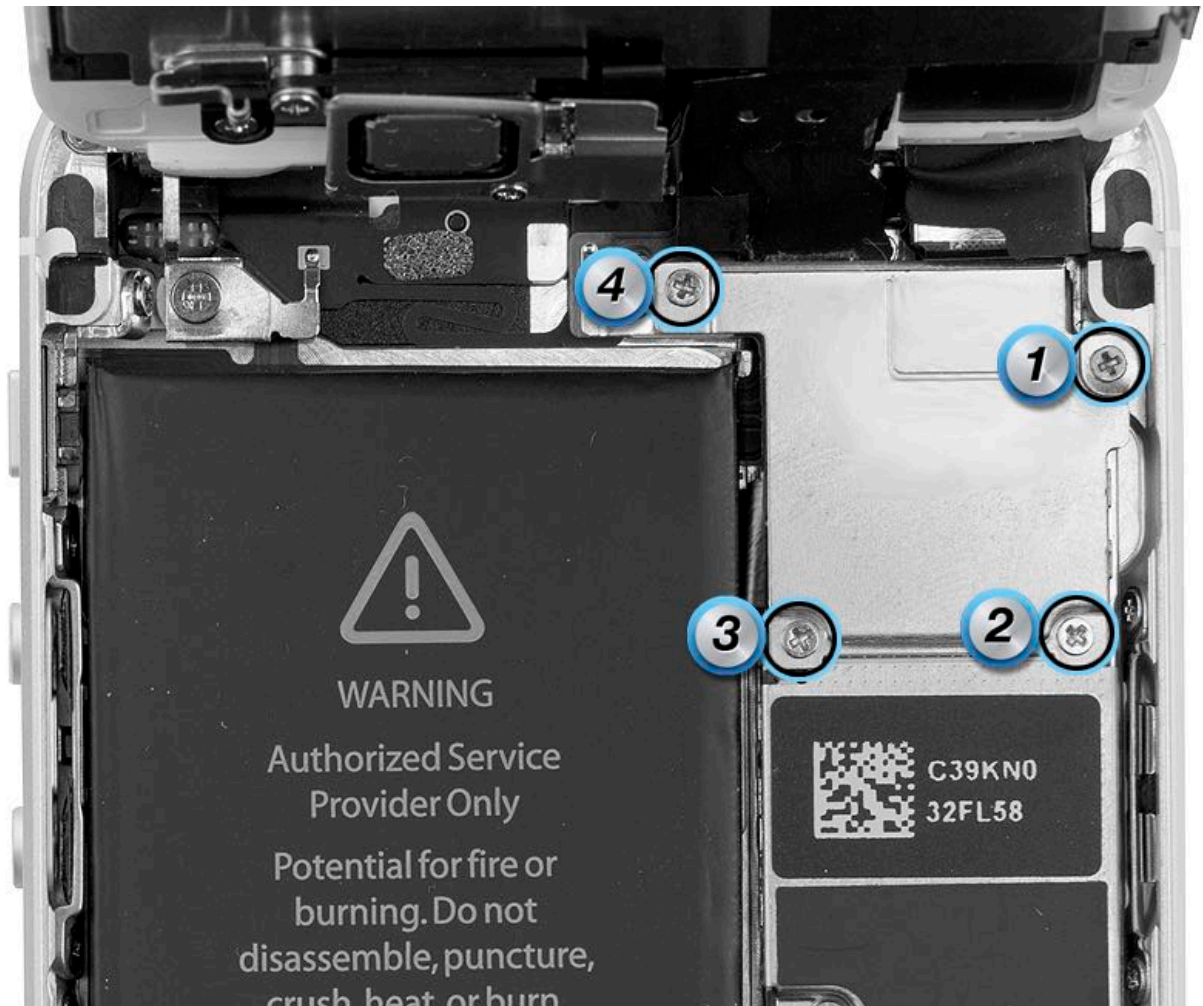
Steps For Removal

1. Remove and discard four cross-head screws from display cowling using iPhone Torque Driver (black) and JCIS Bit. Save cowling for reuse.

Note: Upper right screw #1 is not magnetized. Remove with tweezers.

Important: If display cowling is not present, install replacement cowling upon reassembly.

- iPhone 5s: 923-0686
- iPhone SE: 923-01229



2. Disconnect three stacked display flex connectors using black stick. Gently lift top two connectors to reveal one flex connector below.

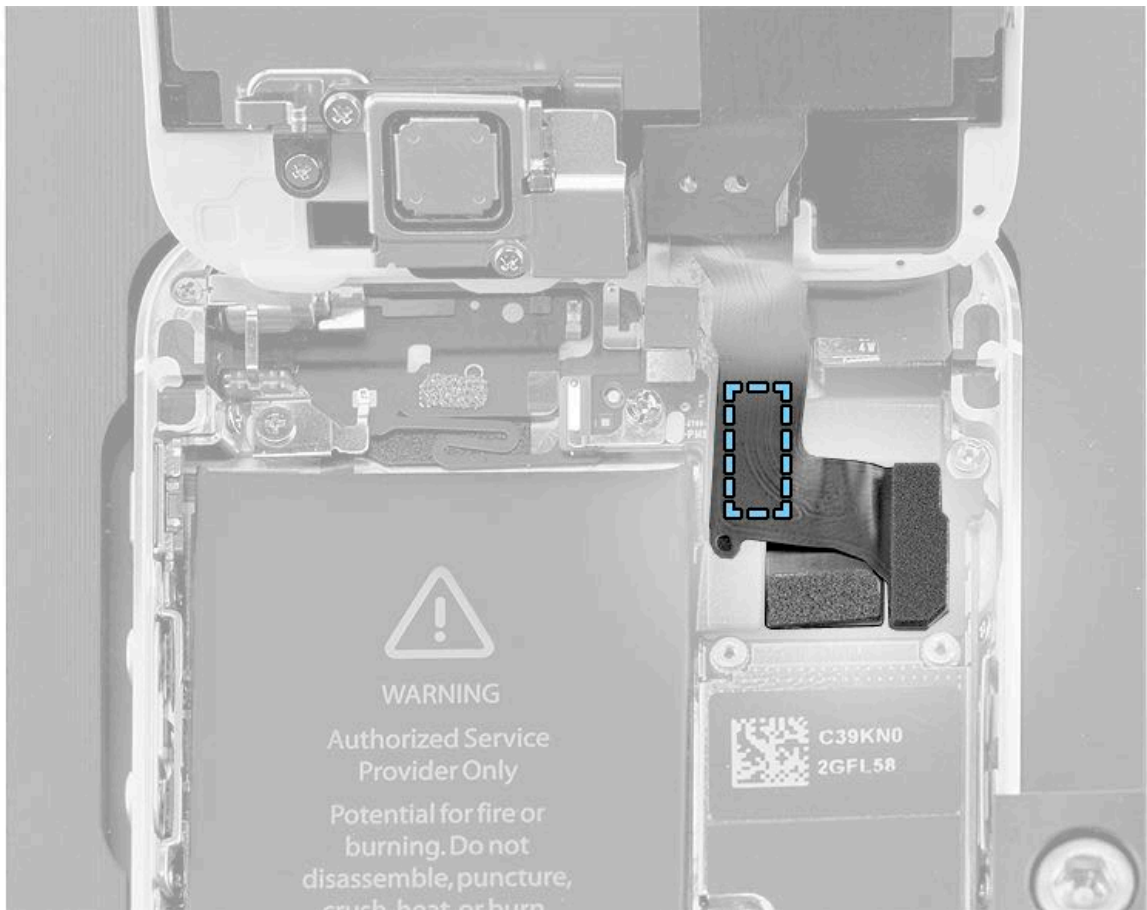


3. Remove display assembly from enclosure.



Steps For Reassembly

1. Align top of display assembly and top of enclosure.
2. Reconnect three stacked display flex connectors starting with the bottom connector. Press down gently until each connector snaps into place. Apply even pressure along the entire length of each connector to ensure proper seating.

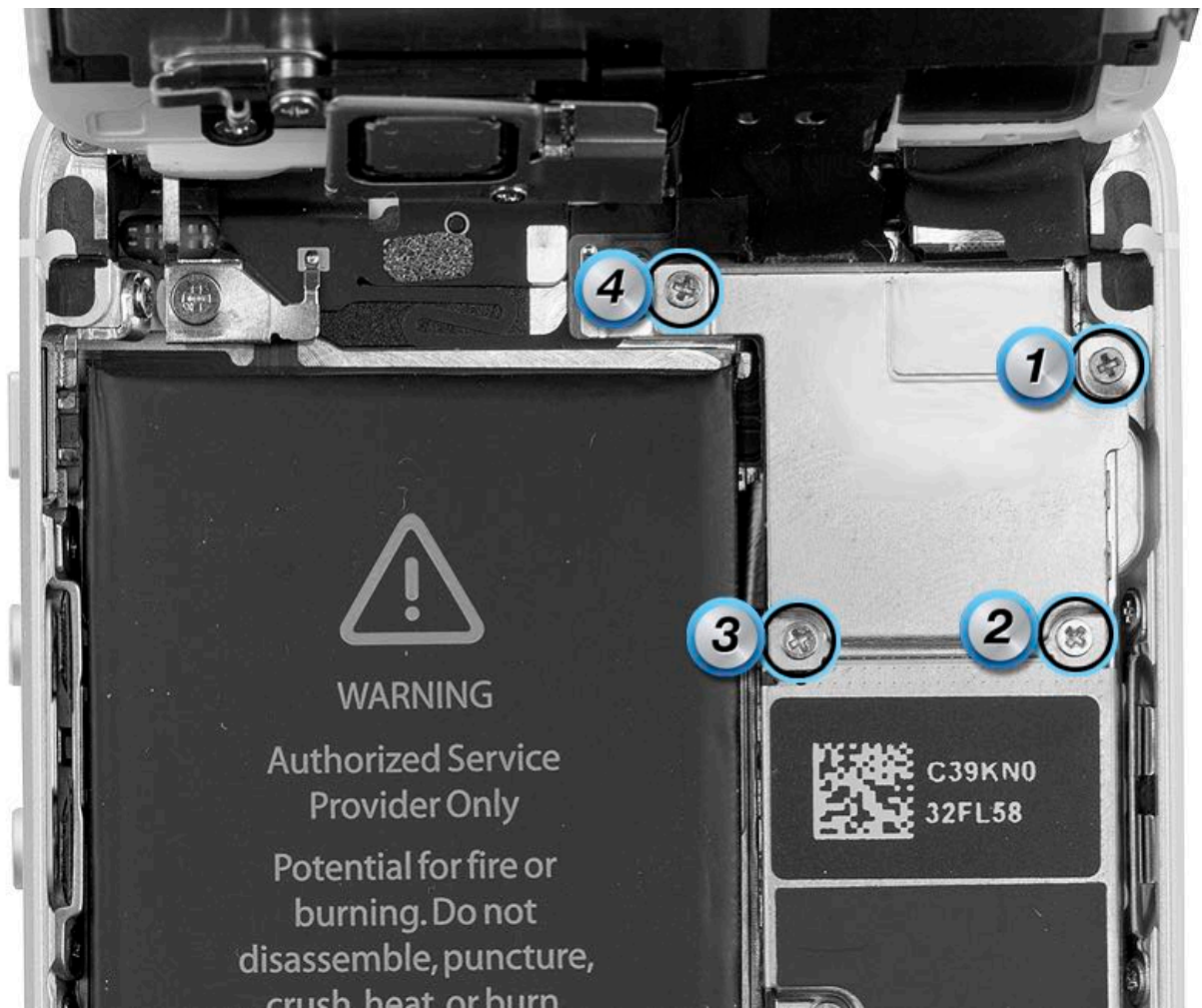


3. Position display cowl on top of stacked connectors.

- iPhone 5s: 923-0686
- iPhone SE: 923-01229

4. Install four **new** cross-head screws into display cowl.

1. 923-0322, not magnetized; place with tweezers
2. 923-0172, lower right
3. 923-0172, lower left
4. 923-0173, upper left



4. Follow reassembly steps in [RP1113: Open Device](#).
5. **Important:** Check iPhone operation with steps in [TP1045: Functional Test](#).

Internal Checks

Internal Liquid Contact Indicator

The iPhone 5, 5c, 5s, and SE contain three internal liquid contact indicators (LCIs). One LCI is externally visible, located on the underside of the display and viewable by removing the SIM tray. Two additional internal LCIs are located in the enclosure. One LCI is between the battery and battery cowl, and another is located to the left of the main camera.

If an LCI is activated (red), it indicates contact with liquid. Liquid can cause damage that is not covered under warranty and is not eligible for modular repair, but is eligible for out-of-Warranty (OOW) paid whole unit replacement.

Important: If an internal LCI is activated or corrosion is present, reassemble the device and do not proceed with modular repair.



Missing Internal Parts

If there are missing internal components or parts, it is considered evidence of disassembly or modification, which:

- is NOT covered under warranty
- MAY qualify for a paid repair.

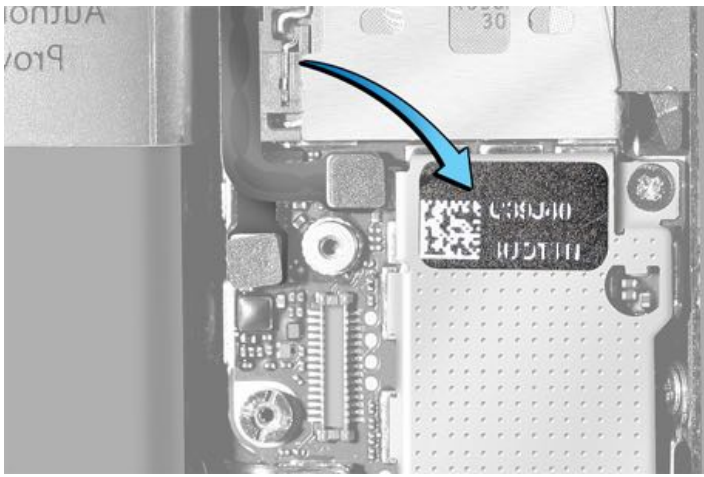
For more information, see article [HT204730: iPhone and iPad: Handling service requests when device has missing or modified parts](#).

Serial Number Bar Code

With the display removed, the serial number is printed in both human-readable and 2D bar code formats on a label. Use Motorola DS4208 scanner (923-0445) to scan the bar code.

Note: The serial number is not present inside iPhone SE.

iPhone 5



iPhone 5c and 5s



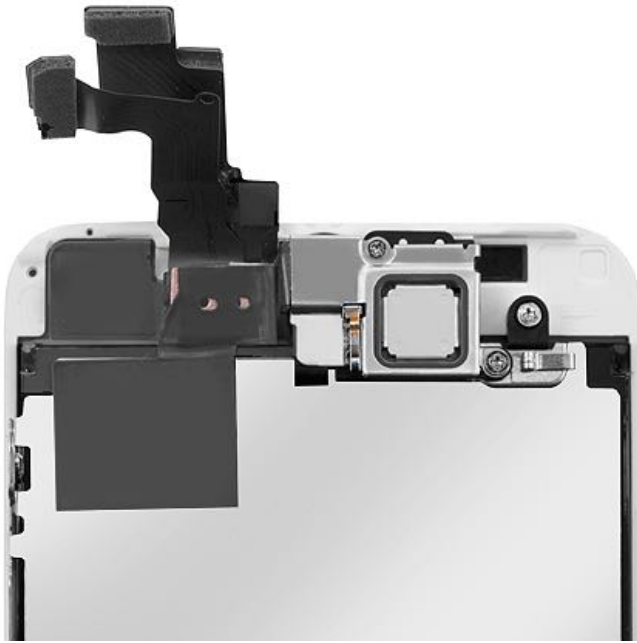
Receiver

First Steps

- [Open Device](#)
- [Disconnect Display Assembly](#)

Important: This procedure should only be performed by Apple-certified technicians.

For video instruction, refer to article [SV214: iPhone 5s and SE Receiver Replacement Video](#).



Tools

1. iPhone Torque Driver (black) (923-0248)
2. JCIS Bit (923-0246) for cross-head screws

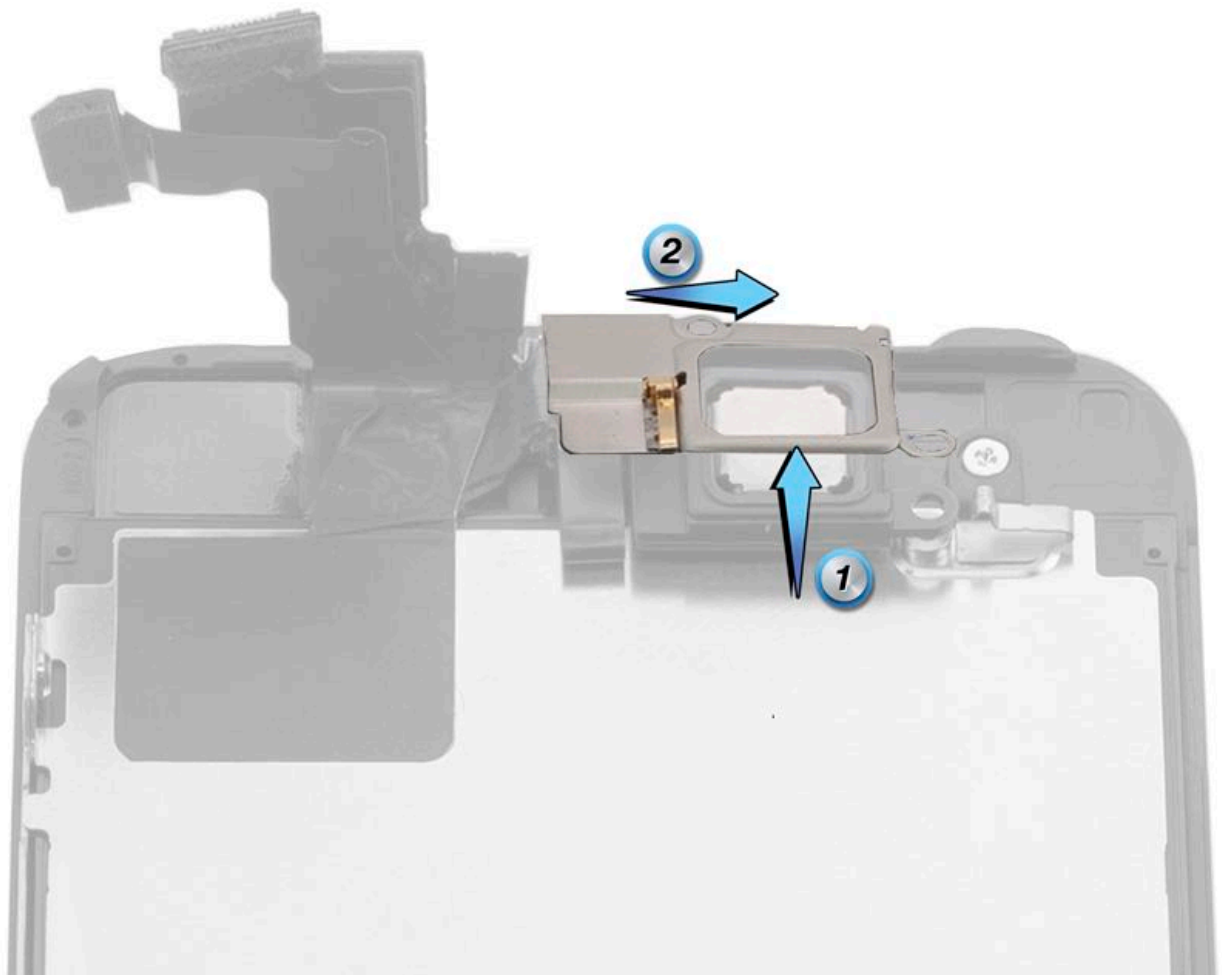


Steps For Removal

1. Remove and discard two cross-head screws from receiver cowling using iPhone Torque Driver (black) and JCIS Bit.



2. Tip receiver cowling up from the bottom and then slide cowling to the right. Remove cowling and save for reuse.



3. Remove receiver located below the cowl.

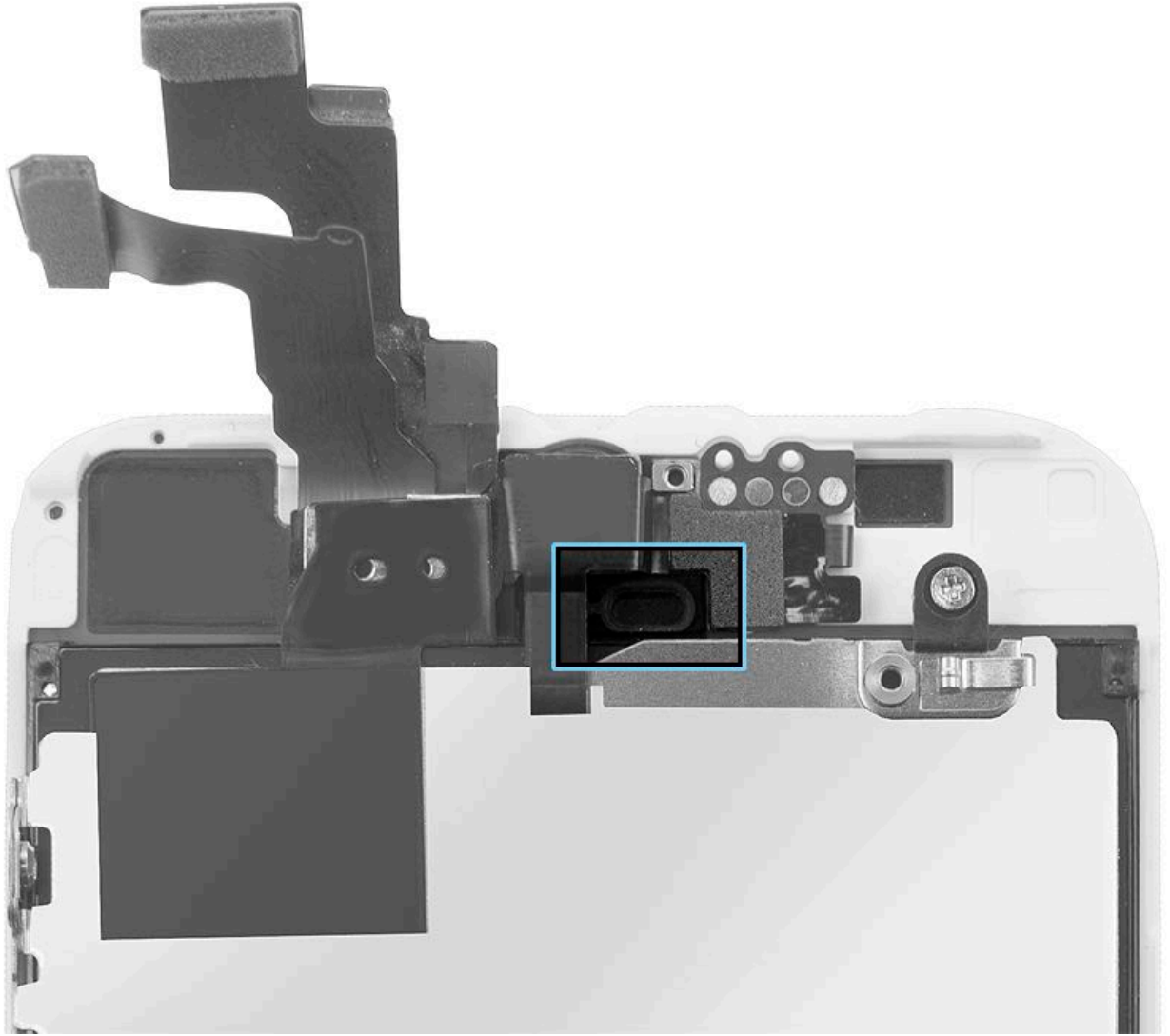
Note: Avoid touching gold contacts on display assembly.



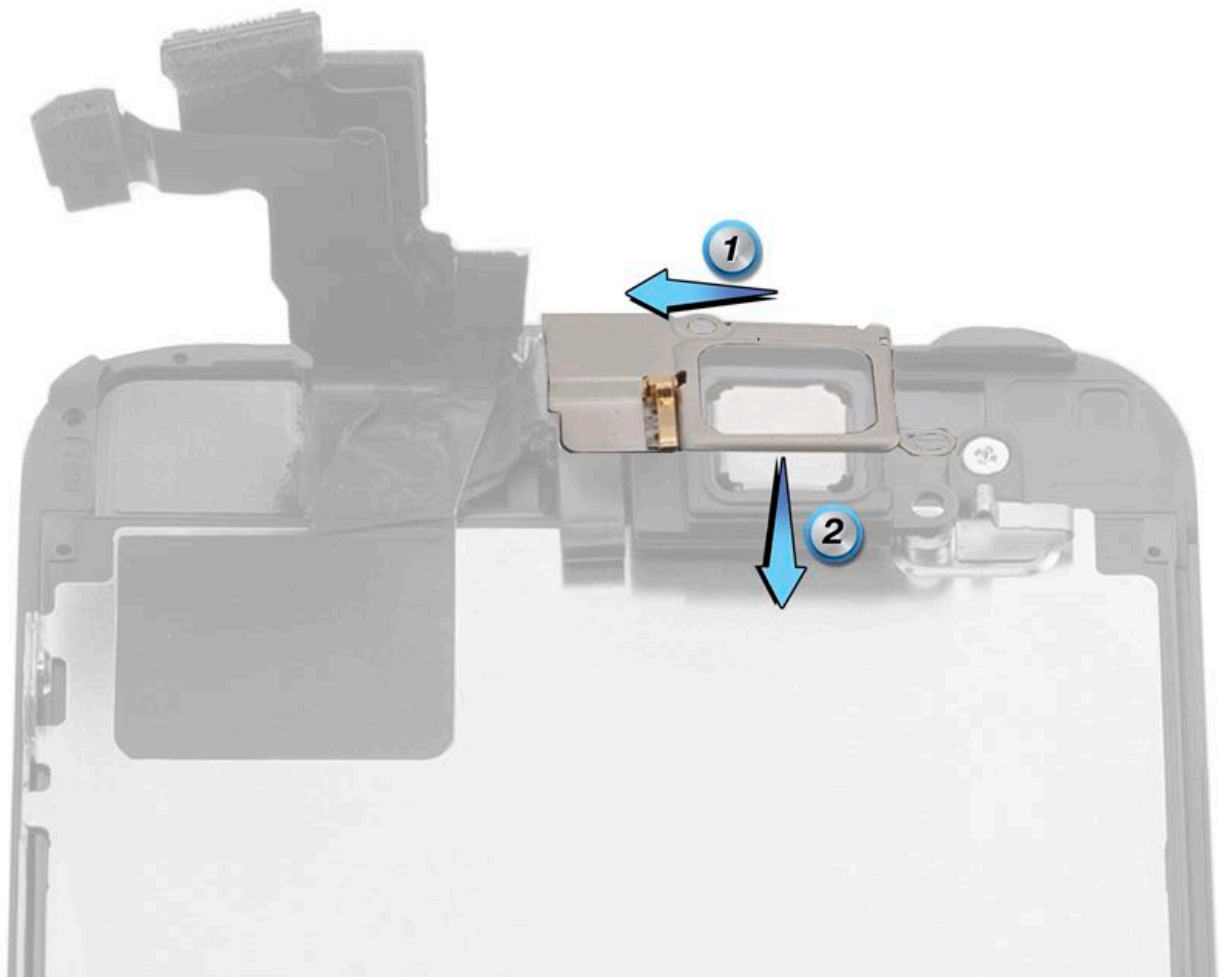
Steps For Reassembly

1. Position receiver so that gold springs touch gold contacts, and oval post on receiver aligns with oval mesh opening on display assembly.

Note: Avoid touching gold springs or gold contacts.



2. Position receiver cowling (923-0694) on top and slightly to the right of receiver.
3. Slide cowling to the left to align screw holes.



4. Install two new cross-head screws into receiver cowling using iPhone Torque Driver (black) and JCIS Bit.

- 923-0661, long, upper left
- 923-0175, short, lower right

Important: Do not reuse old screws.



4. Follow reassembly steps in [RP1114: Disconnect Display Assembly](#).

5. Follow reassembly steps in [RP1113: Open Device](#).

6. **Important:** Check iPhone operation with steps in [TP1045: Functional Test](#).

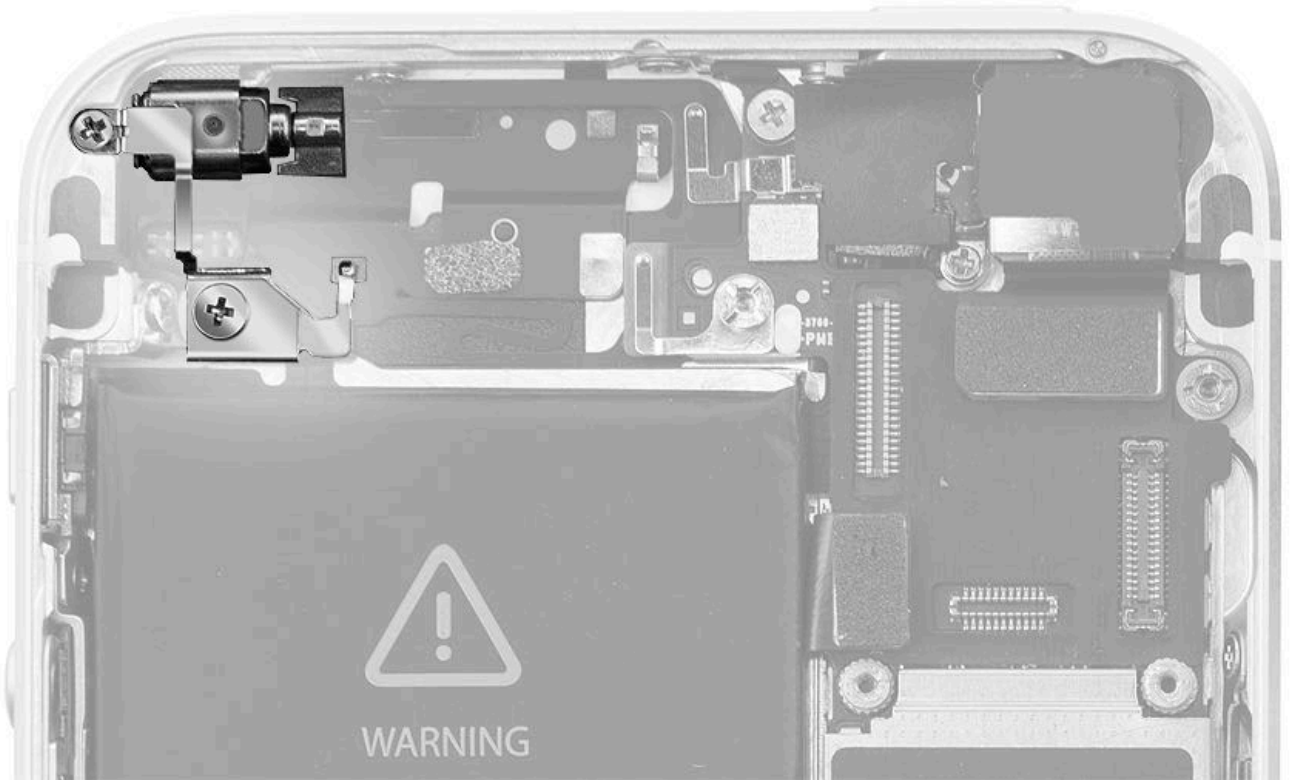
Vibe Motor

First Steps

- [Open Device](#)
- [Disconnect Display Assembly](#)

Important: This procedure should only be performed by Apple-certified technicians.

For video instruction, refer to article [SV212: iPhone 5s and SE Vibe Motor Replacement Video](#).



Tools

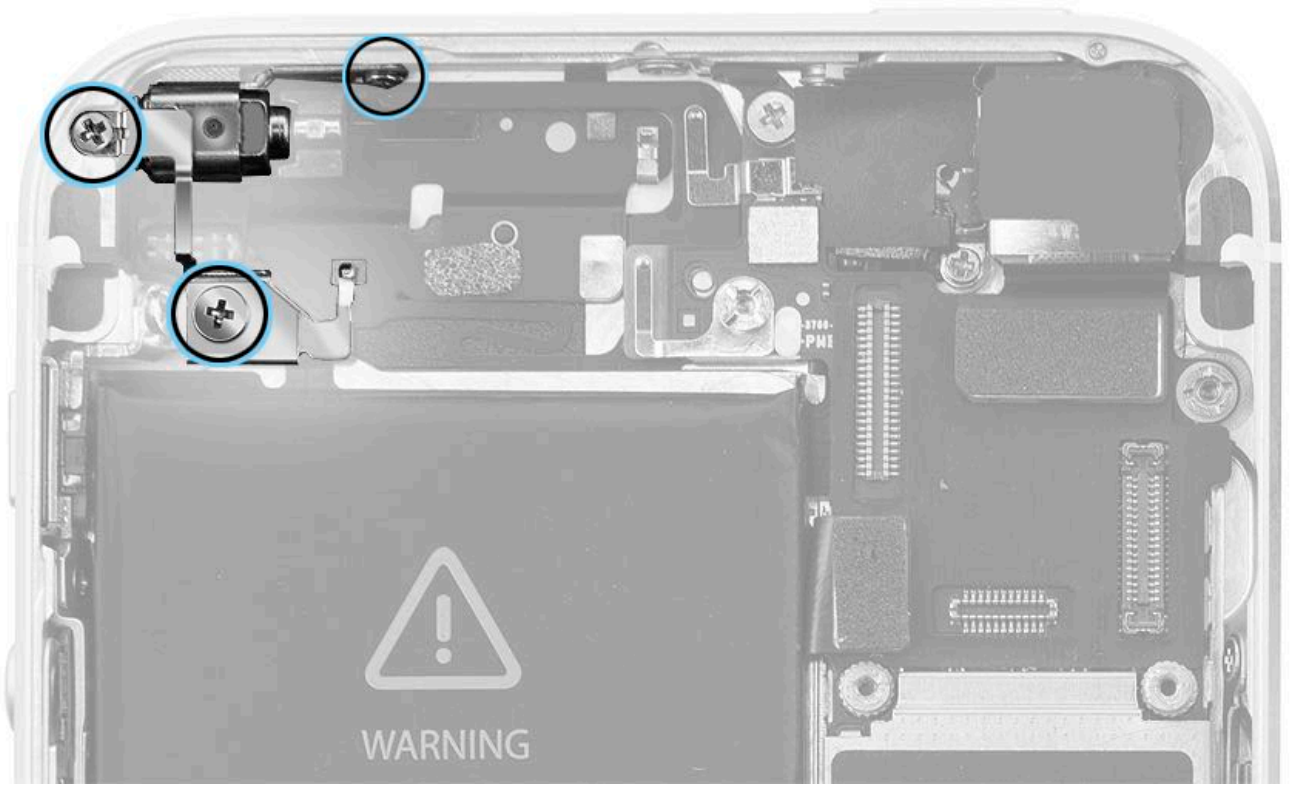
1. iPhone Torque Driver (blue) (923-0448)
2. JCIS Bit (923-0246) for cross-head screws
3. ESD-safe tweezers



Steps For Removal

1. Remove and discard three cross-head screws from vibe motor using iPhone Torque Driver (blue) and JCIS Bit. Hold torque driver parallel to iPhone to remove the screw inside top band.
2. Remove vibe motor from enclosure using ESD-safe tweezers.

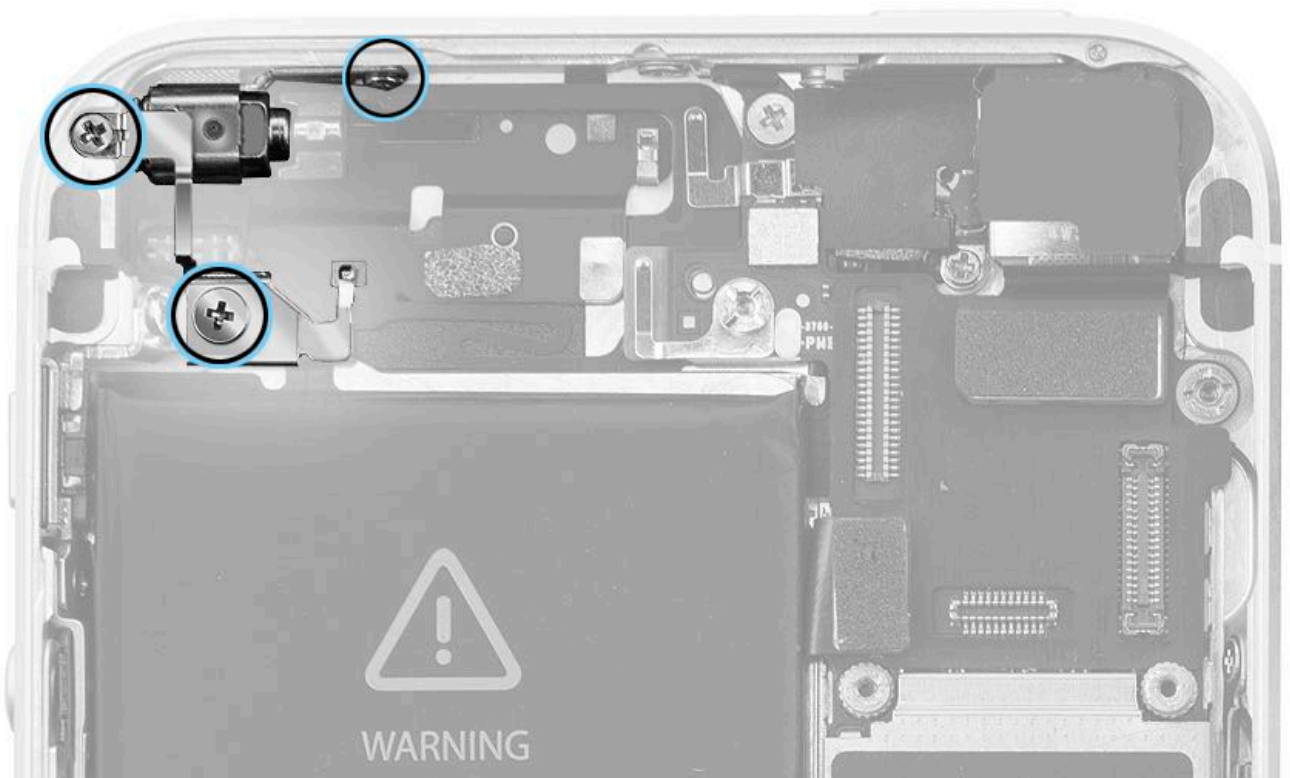
Note: Avoid touching gold contacts in enclosure underneath vibe motor.



Steps For Reassembly

1. Position vibe motor into enclosure with ESD-safe tweezers.
2. Install three new cross-head screws into vibe motor using iPhone Torque Driver (blue) and JCIS Bit.
 - 923-0187, upper left
 - 923-0662, upper right, in band
 - 923-0685, bottom right, large head

Important: Do not reuse old screws.



3. Follow reassembly steps in [RP1114: Disconnect Display Assembly](#).

4. Follow reassembly steps in [RP1113: Open Device](#).
5. **Important:** Check iPhone operation with steps in [TP1045: Functional Test](#).

iSight Camera

First Steps

- [Open Device](#)
- [Disconnect Display Assembly](#)

Important: Wear nitrile or lint-free gloves to prevent contamination of camera lens.

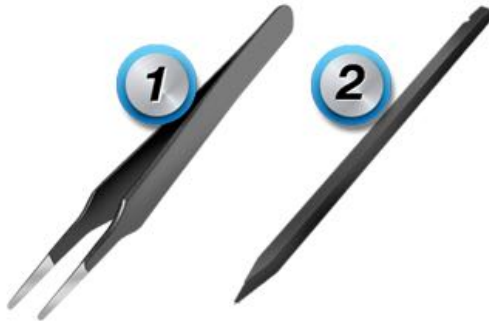
Important: This procedure should only be performed by Apple-certified technicians.

For video instruction, refer to article [SV211: iPhone 5s and SE iSight Camera Replacement Video](#).



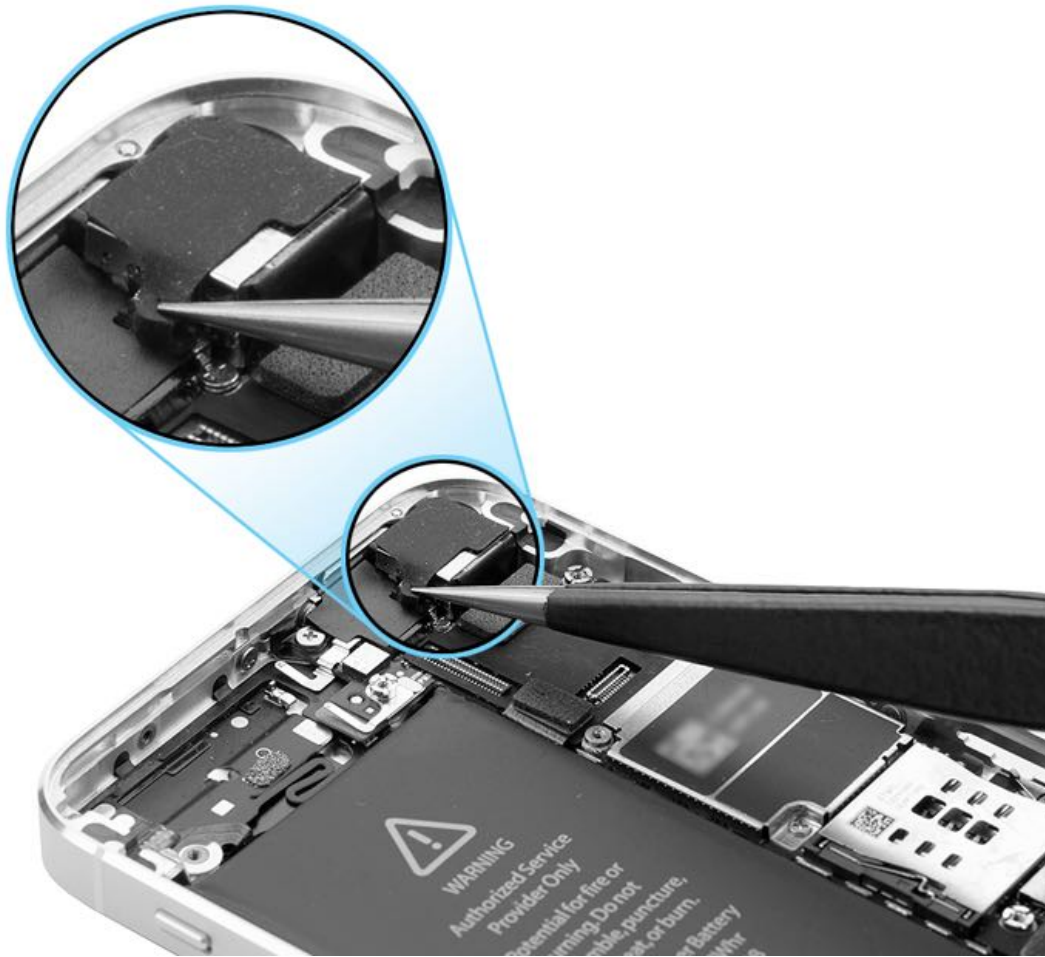
Tools

1. ESD-safe tweezers
2. Nylon Probe Tool (black stick, 922-5065)
3. Nitrile or lint-free gloves (not shown)

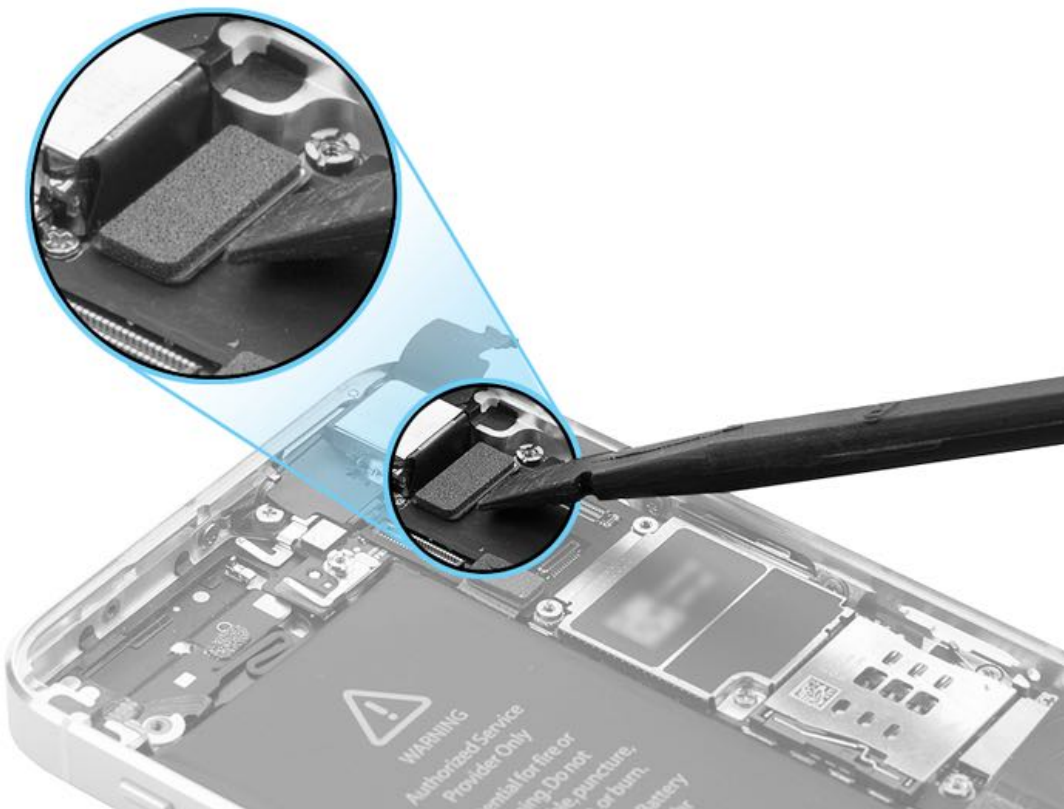


Steps For Removal

1. Use ESD-safe tweezers to gently lift rubber cover from camera.



2. Use flat end of a black stick to disconnect camera flex connector from logic board.

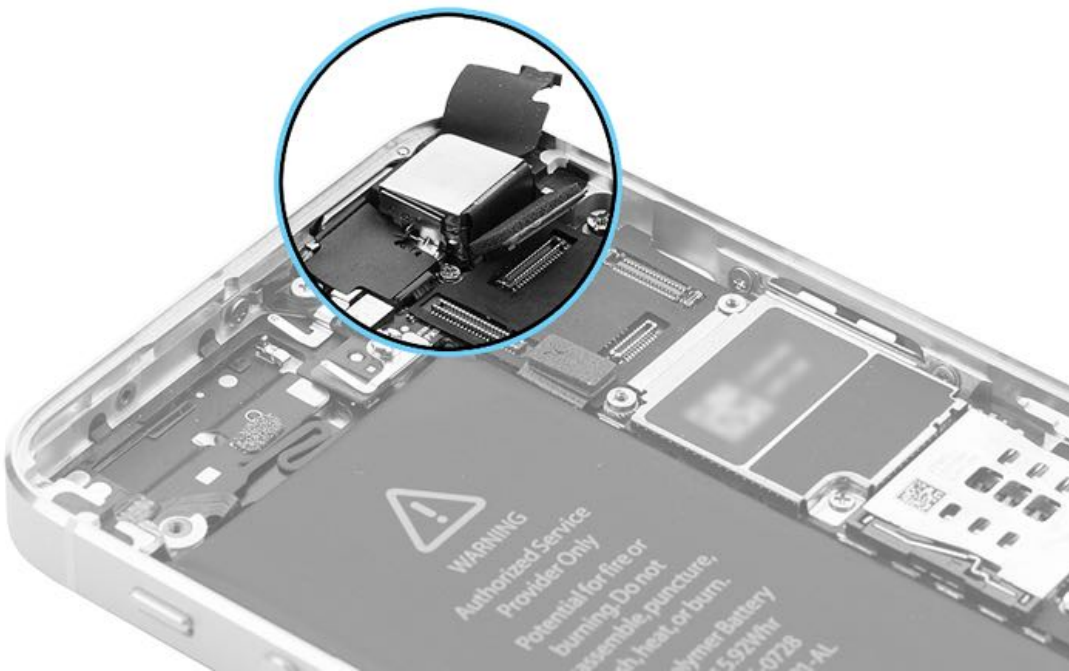


3. Remove camera from enclosure.



Steps For Reassembly

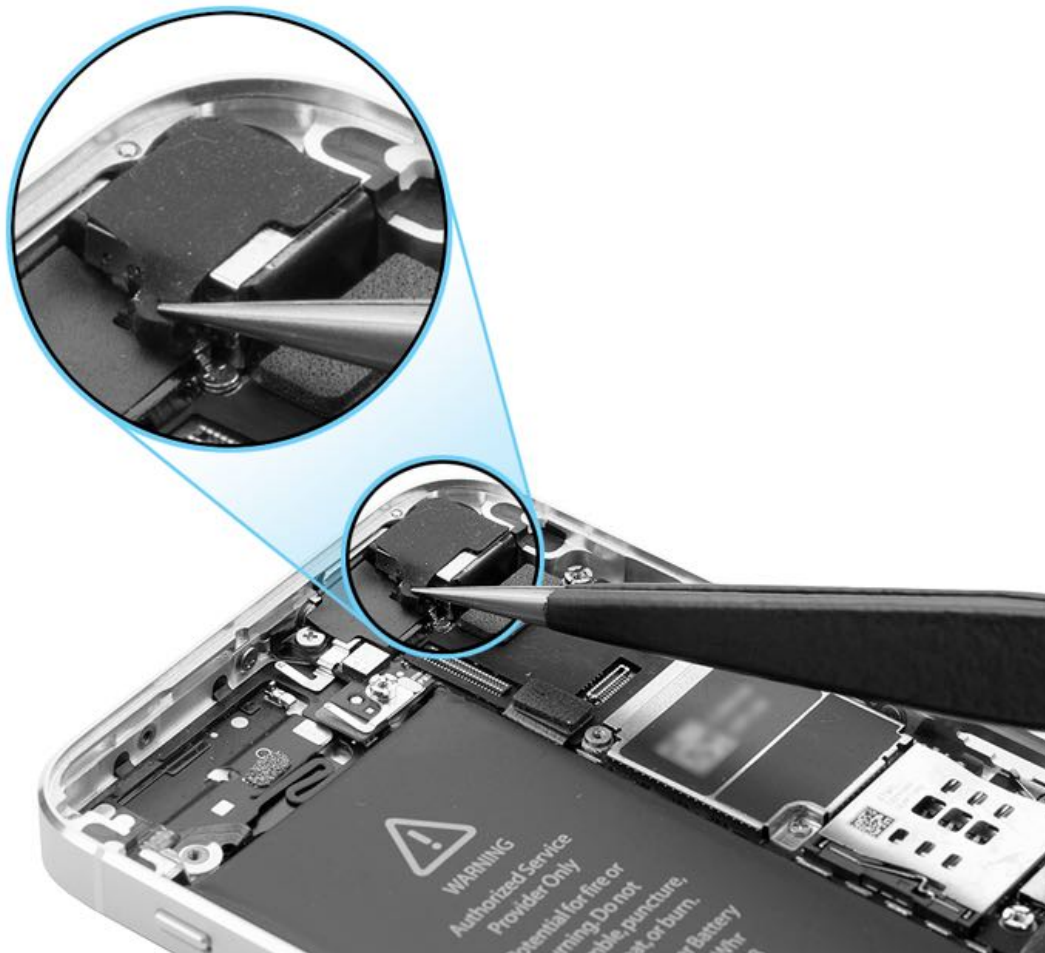
1. Remove protective lens cover from replacement camera.
2. Position camera in enclosure.



3. Connect camera flex connector to logic board.



4. Fold rubber cover over top of camera using ESD-safe tweezers. Secure rubber cover onto pins.



5. Follow reassembly steps in [RP1114: Disconnect Display Assembly](#).

6. Follow reassembly steps in [RP1113: Open Device](#).

7. **Important:** Check iPhone operation with steps in [TP1045: Functional Test](#).

Battery

First Steps

- Review [TP328: iPhone Safety](#)
- [Open Device](#)
- [Disconnect Display Assembly](#)

Important: This procedure should only be performed by Apple-certified technicians.



Warning: If the battery is dented, punctured, swollen, or otherwise damaged, then **stop the repair**. Do not remove the battery from the device. Reassemble and replace the whole unit.

Refer to articles [TP328: iPhone Safety](#) and [HT204762: Enclosure separation due to expanded battery](#).

Warning: Do not reuse or reinstall a loose battery or a battery that has been removed. Replace it with a new battery. If a battery is unavailable, replace the whole unit.

For video instruction, refer to article [SV215: iPhone 5s and SE Battery Replacement Video](#).



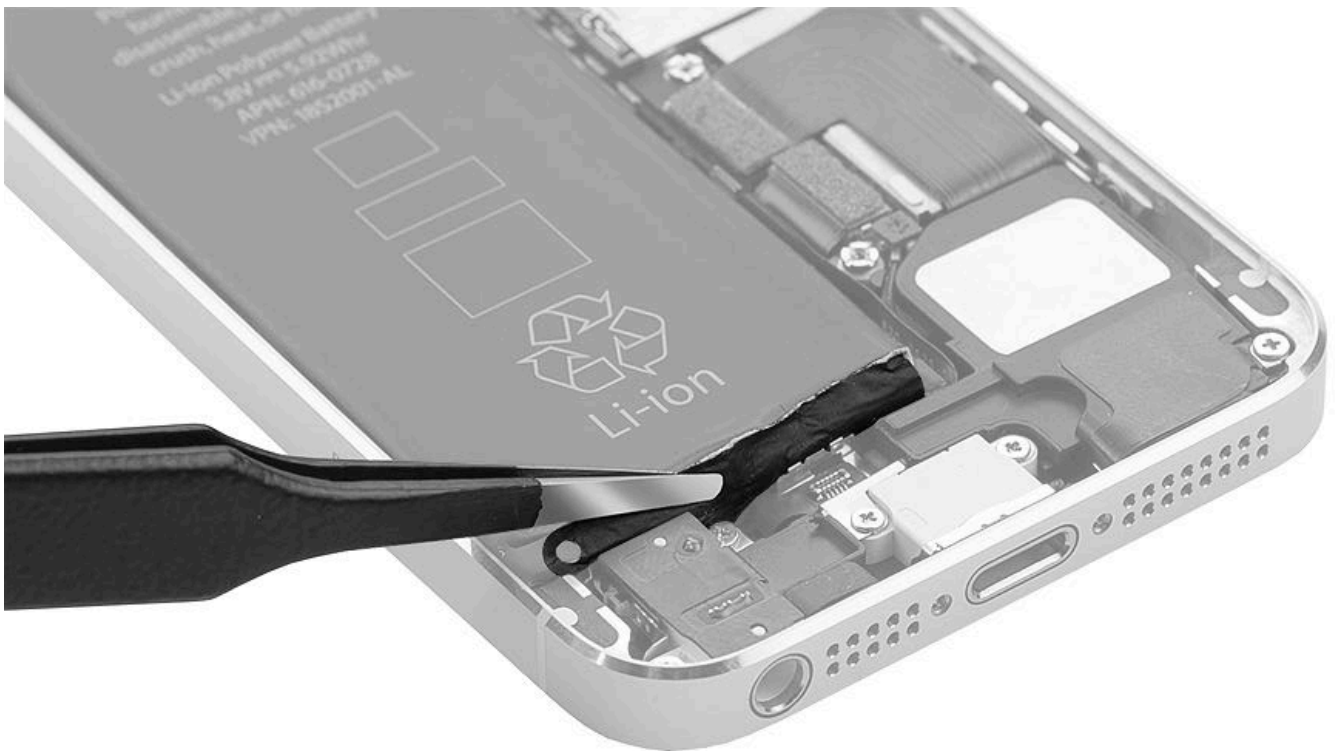
Tools

1. iPhone torque driver (black) (923-0248)
2. JCIS bit (923-0246) for cross-head screws
3. ESD-safe tweezers
4. Nylon probe tool (black stick, 922-5065)
5. iPhone 5/5s Repair Tray (923-0315)
6. Universal iPhone Battery Fixture (923-00065)
7. Isopropyl alcohol (IPA) wipes (not shown)
8. Wire cutters or small scissors (not shown)



Steps For Removal

1. Use ESD-safe tweezers to gently lift battery adhesive tab.



2. Gently pull battery adhesive tab up 13 mm (1/2 inch).
3. Cut top of battery adhesive tab using wire cutters or small scissors to separate the tab into two strips.



Warning: If an adhesive tab or strip breaks off and cannot be retrieved, then **do not use tools to pry up the battery**. In this situation, replace the whole unit.



4. Grasp one adhesive strip and slowly pull toward bottom of the iPhone. As adhesive strip extends, grasp strip closer to battery and continue to pull slowly. Hold battery with fingers.

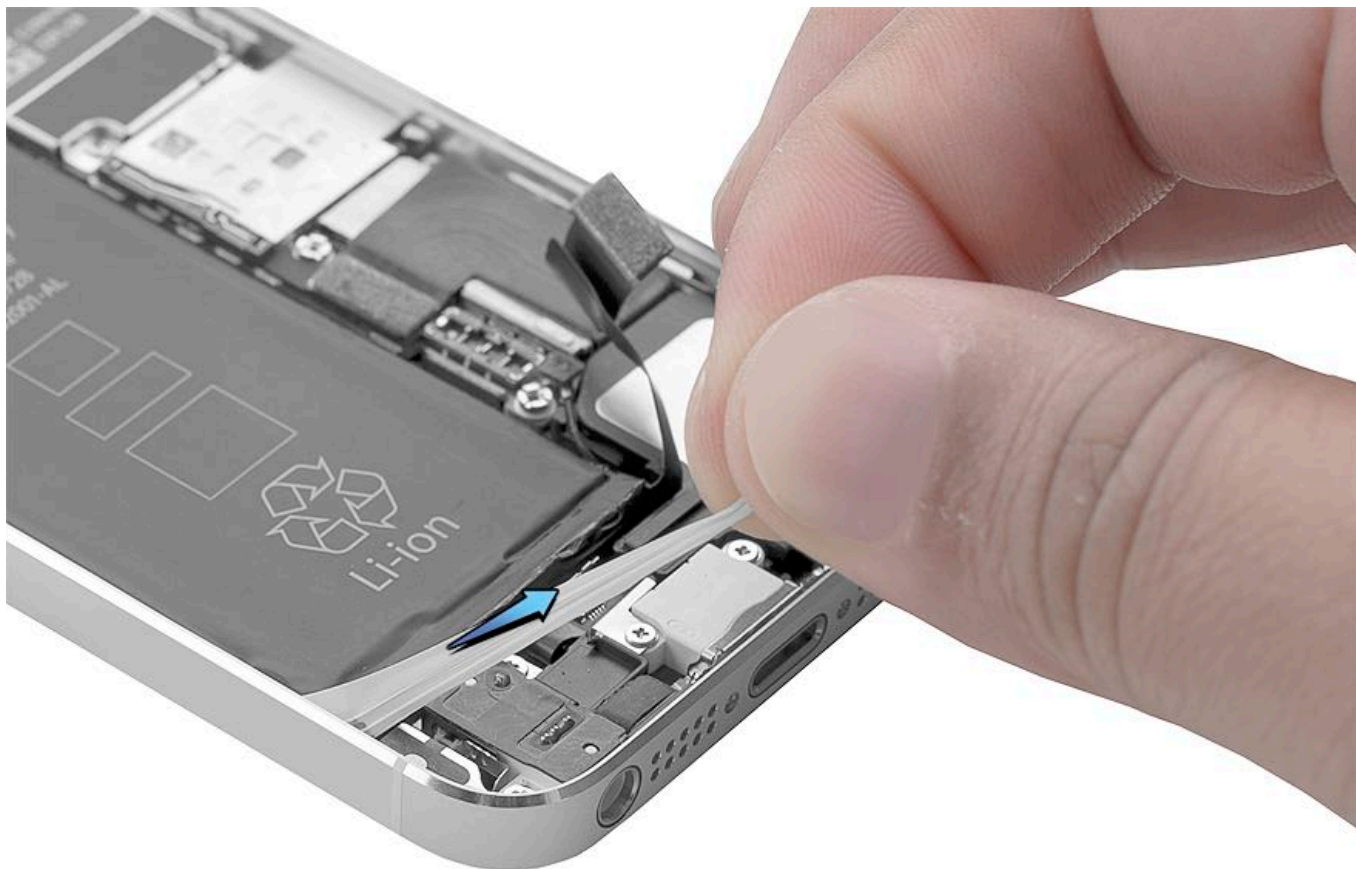
Note: If adhesive strip breaks, then attempt to retrieve strip with ESD-safe tweezers. If strip cannot be retrieved, then attempt to remove other strip.



5. Guide adhesive strip around corner of battery. Pull slowly around corner to prevent strip from tearing.

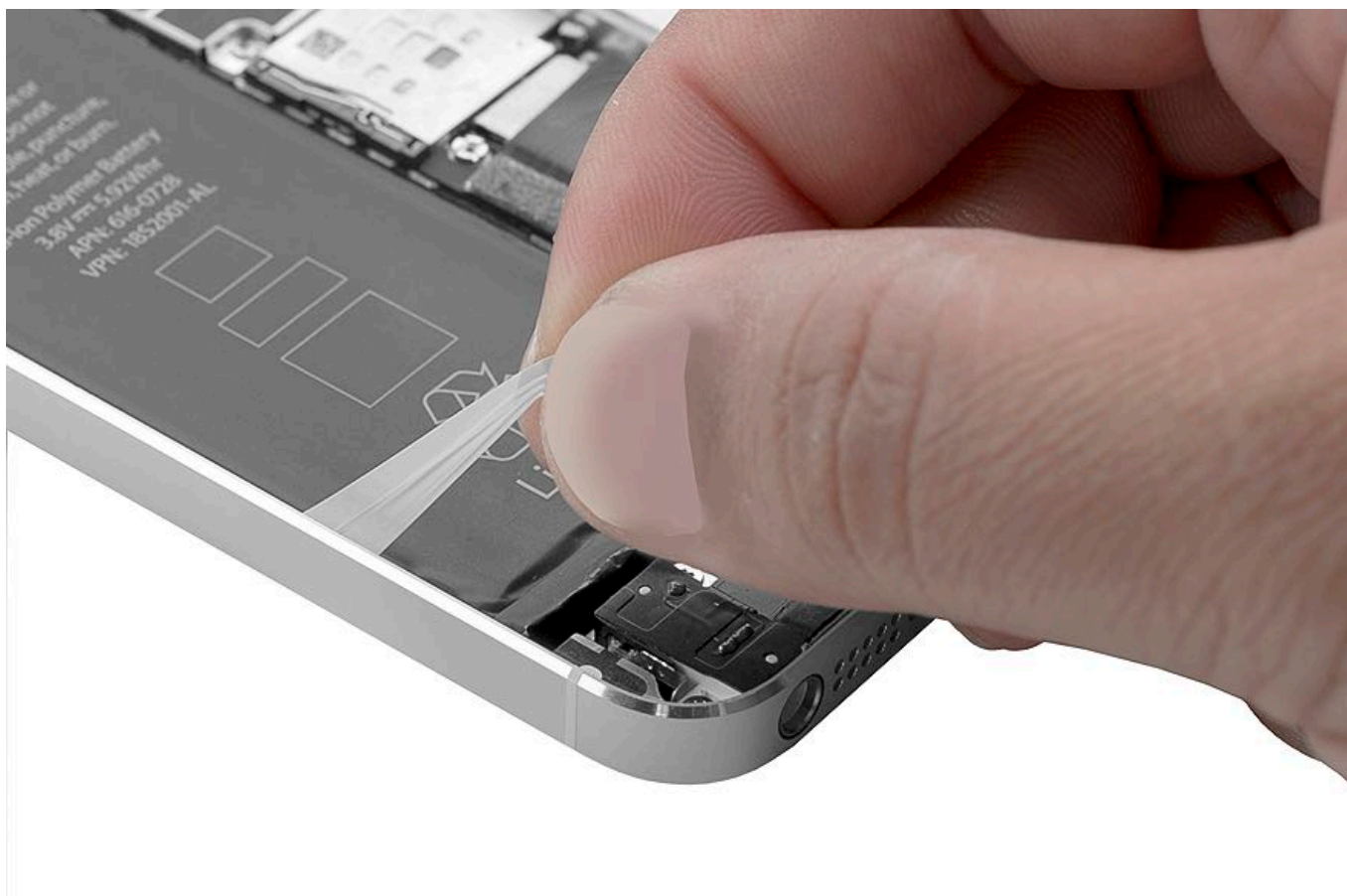
Note: If adhesive strip breaks, then attempt to retrieve strip with ESD-safe tweezers. If strip cannot be retrieved, then attempt

to remove other strip.



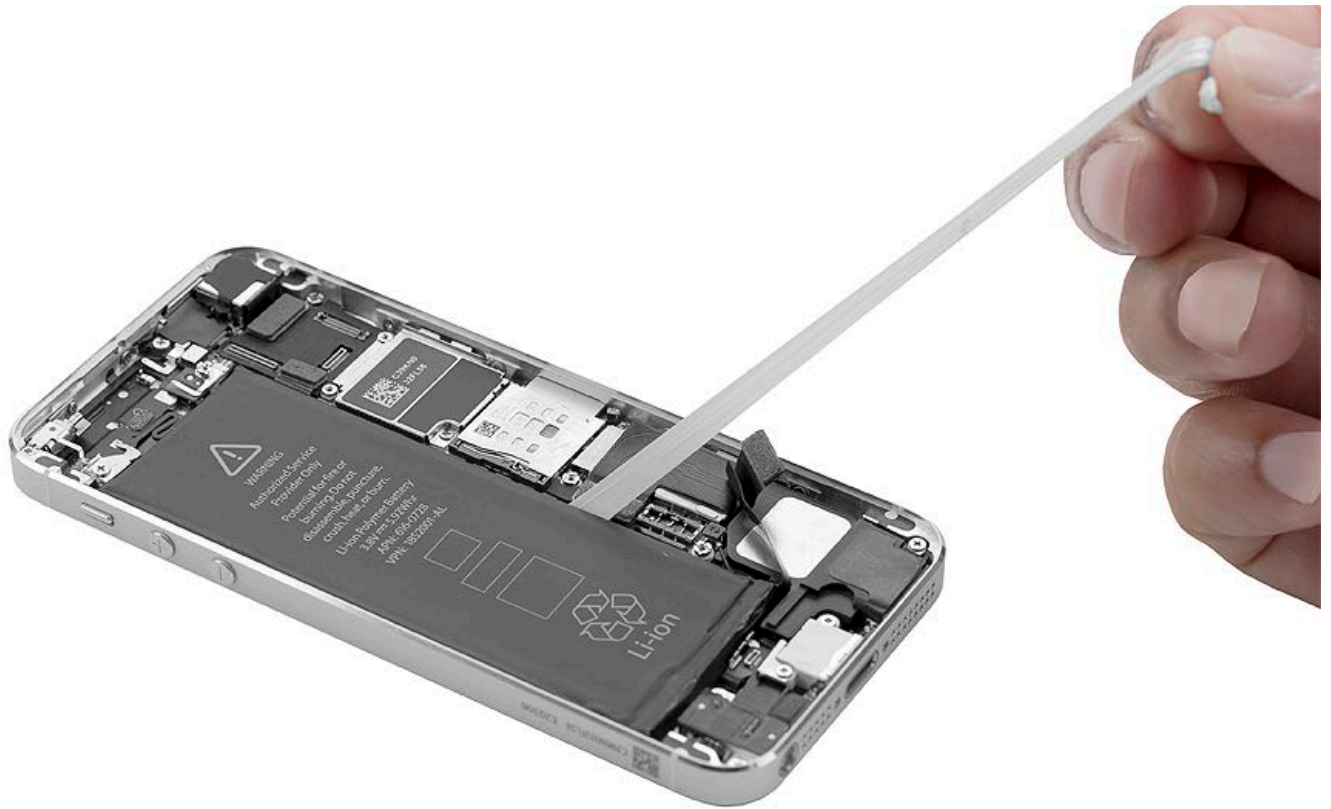
6. Continue to slowly pull until adhesive strip releases.

Note: If adhesive strip breaks, then attempt to retrieve strip with ESD-safe tweezers. If strip cannot be retrieved, then attempt to remove other strip.



7. Repeat steps 4–6 with other adhesive strip.

Note: If adhesive strip breaks, then attempt to retrieve strip with ESD-safe tweezers. If strip cannot be retrieved, then attempt step 8.



8. Use a black stick to gently lift battery from bottom edge.



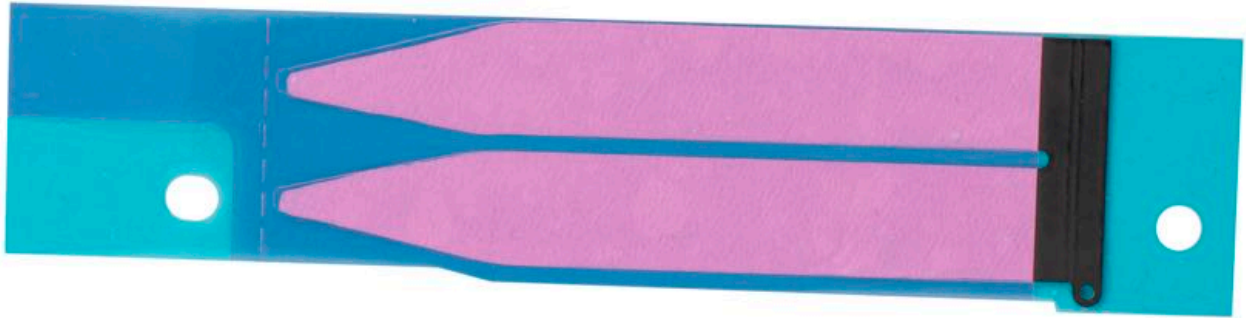
Warning: If you feel any resistance, **stop the repair**. Reinstall the display assembly and replace the whole unit.

12. Remove any remaining adhesive from the enclosure underneath battery using IPA wipes.



Steps For Reassembly

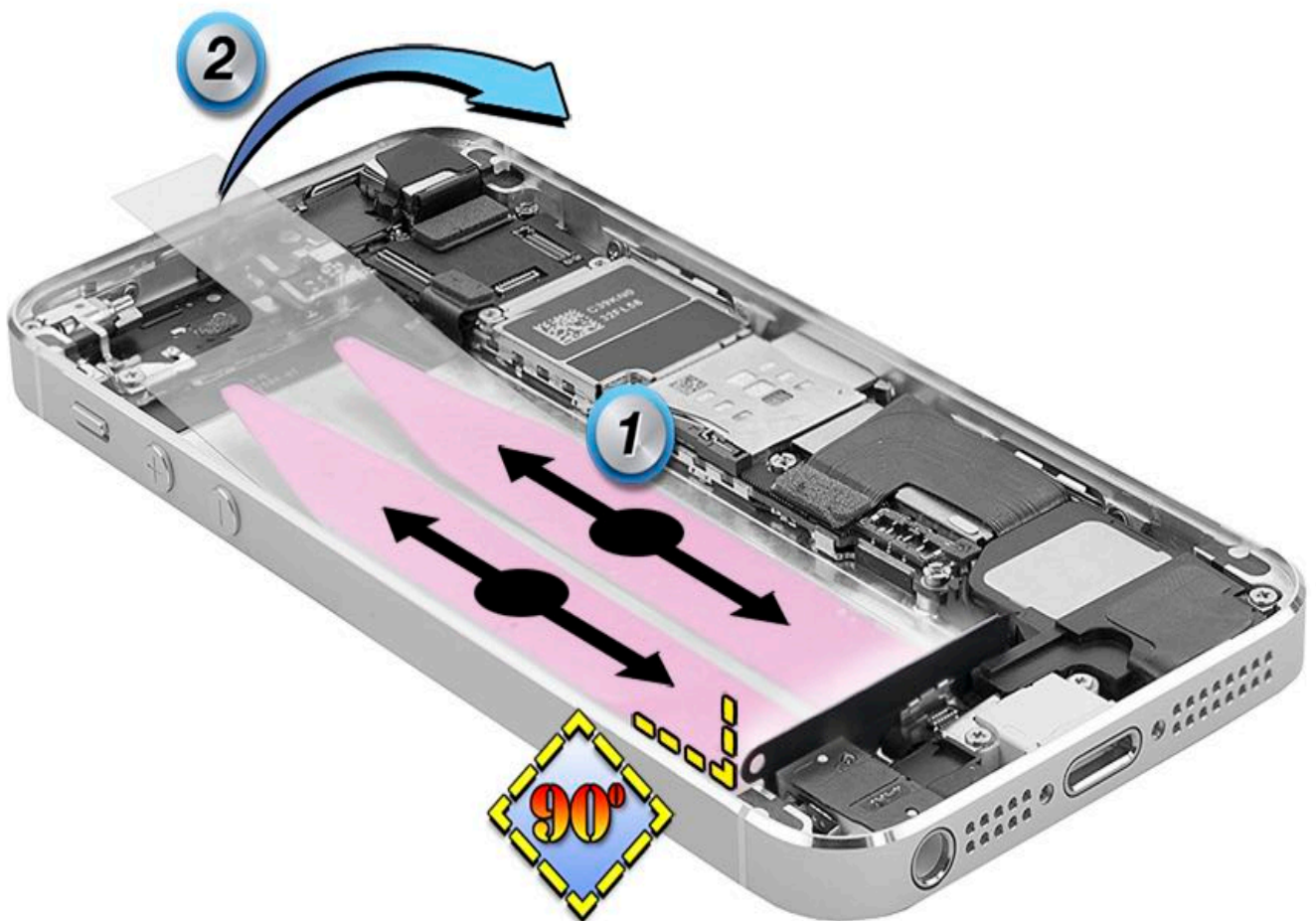
1. Peel blue backing from new battery adhesive strip.



2. Position new battery adhesive strip in enclosure as shown.

Important: The black tab must be positioned at a 90-degree angle against the speaker, as shown.

3. Apply light pressure to secure adhesive to enclosure.
4. Peel pink backing to expose adhesive that will adhere to battery.



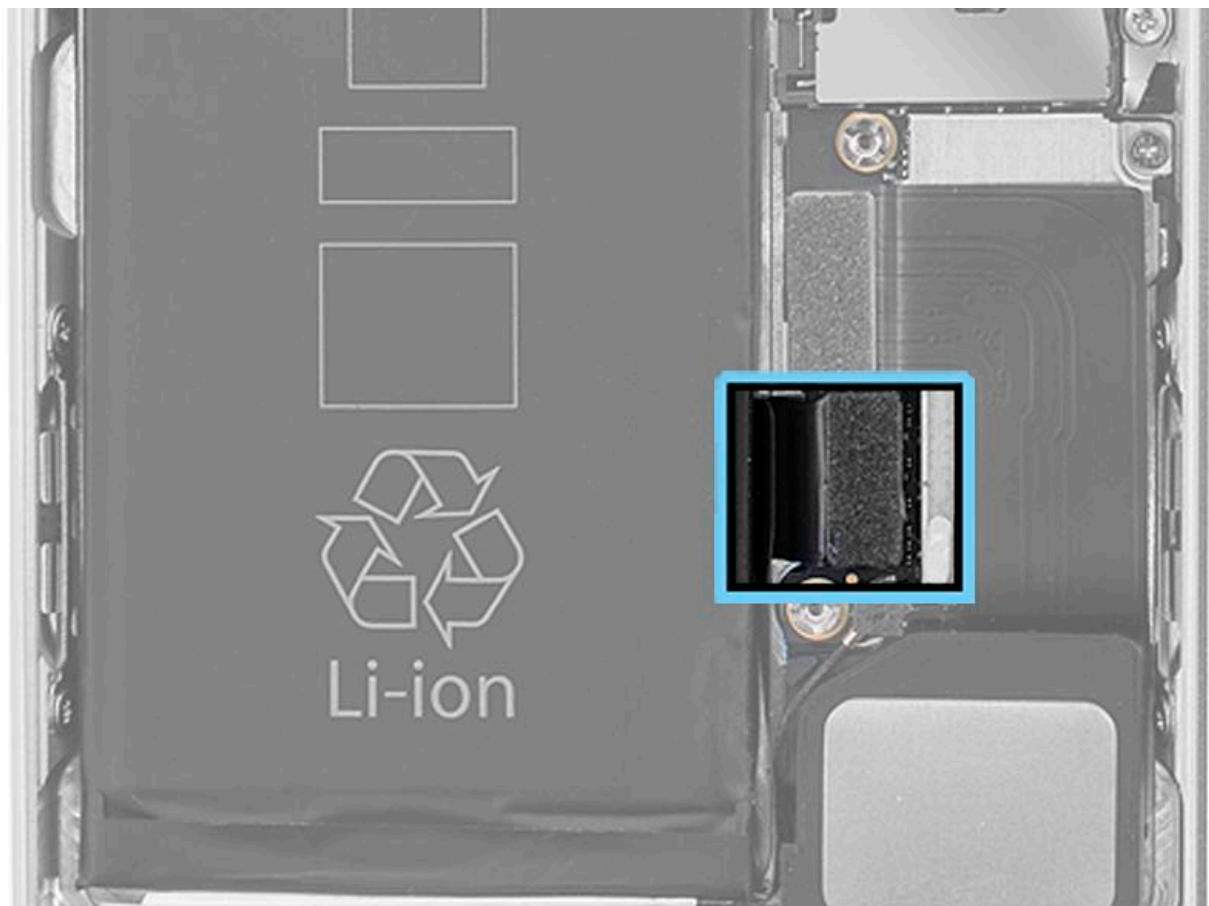
5. Position bottom edge of battery against speaker.

Note: Leave 2 mm of space between battery and speaker to allow adhesive tab to be folded.

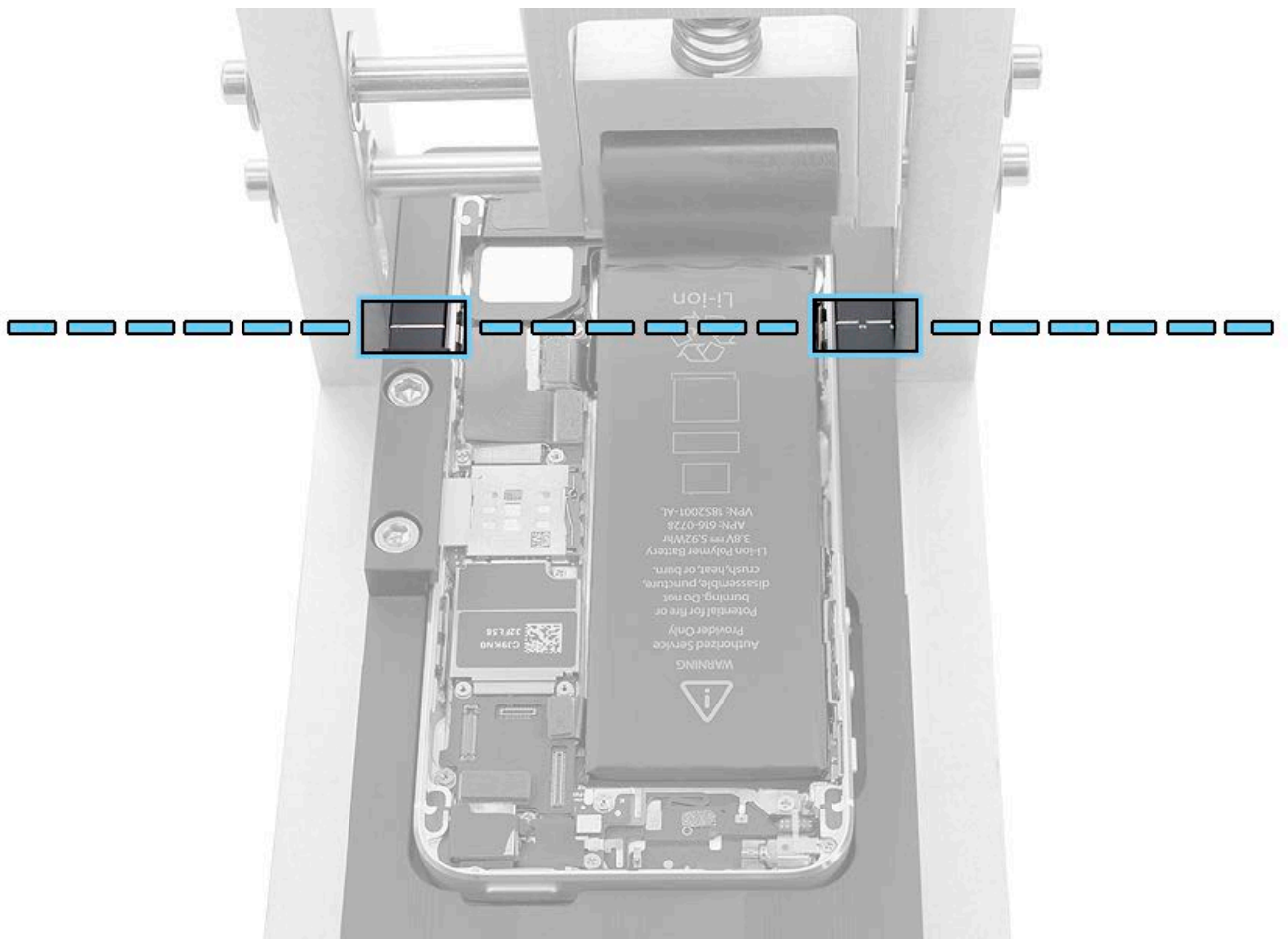
6. Carefully lay battery down into enclosure, ensuring that it is centered.



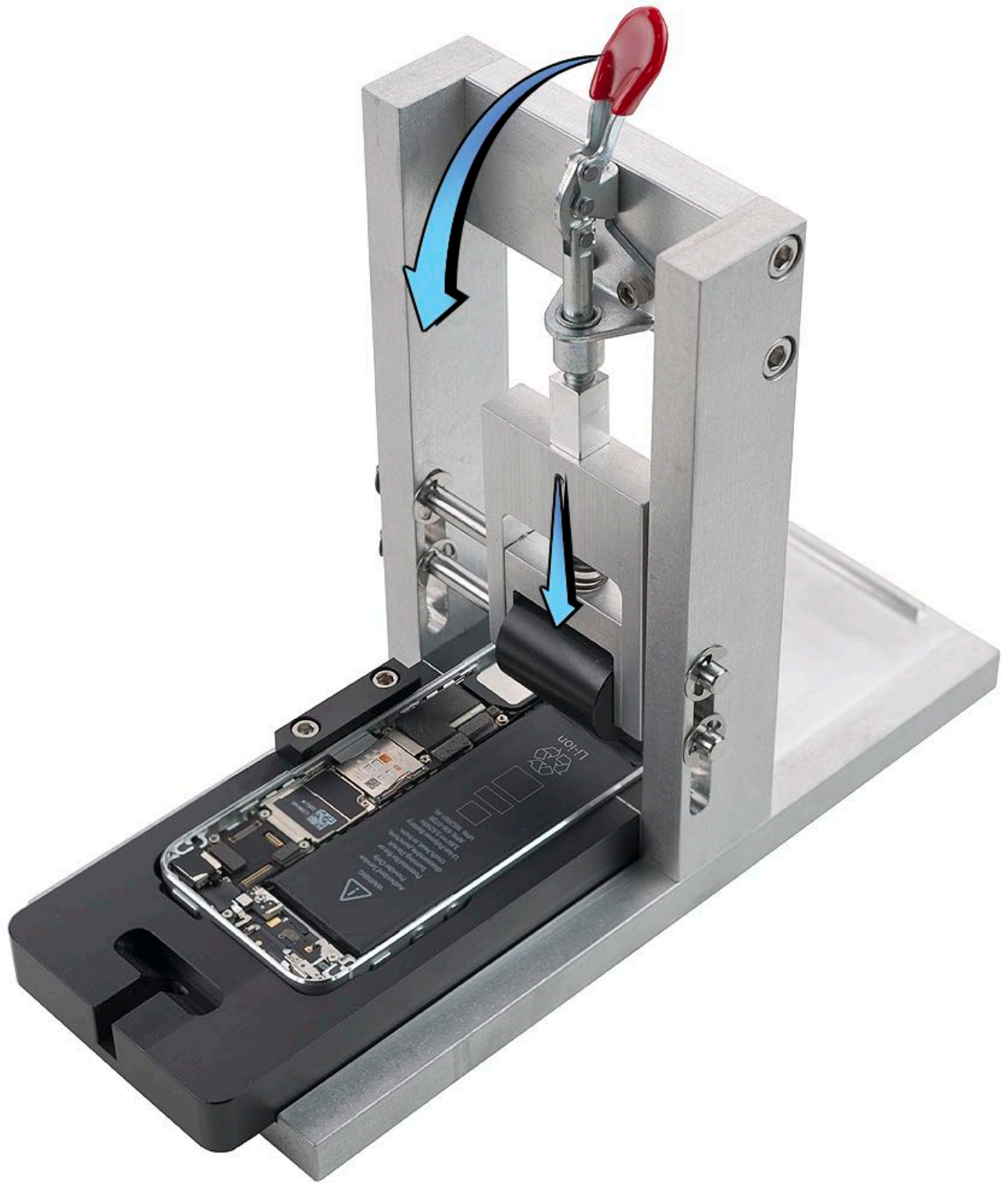
7. Press battery connector down onto logic board.



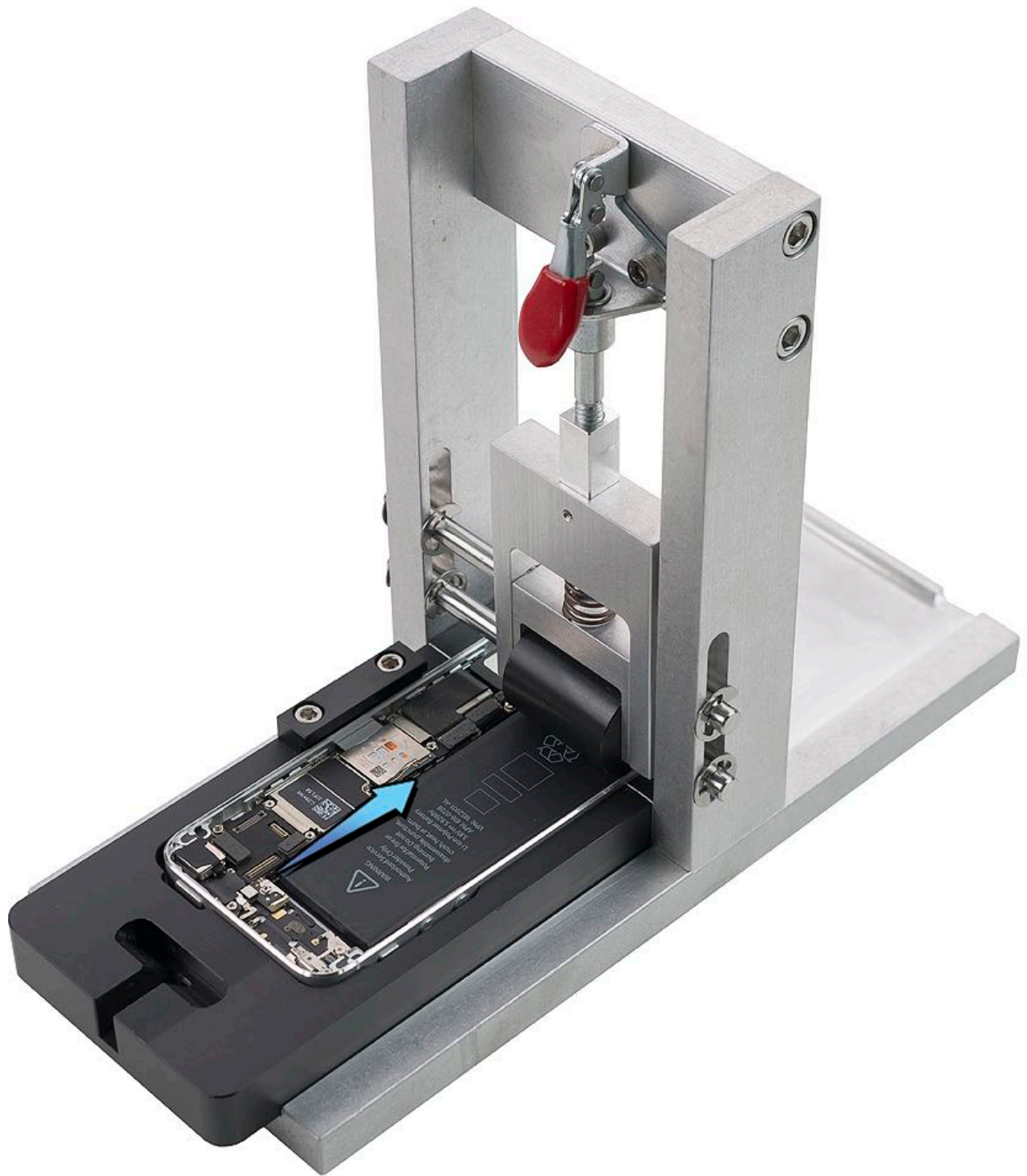
8. Put iPhone into iPhone Battery Fixture with battery positioned underneath roller. Align white marks on tray with front edge of vertical tower.



9. Lower red lever to move pressure roller into place above iPhone battery.



10. Slide tray through vertical tower. This will cause the roller to press battery down onto adhesive strip.



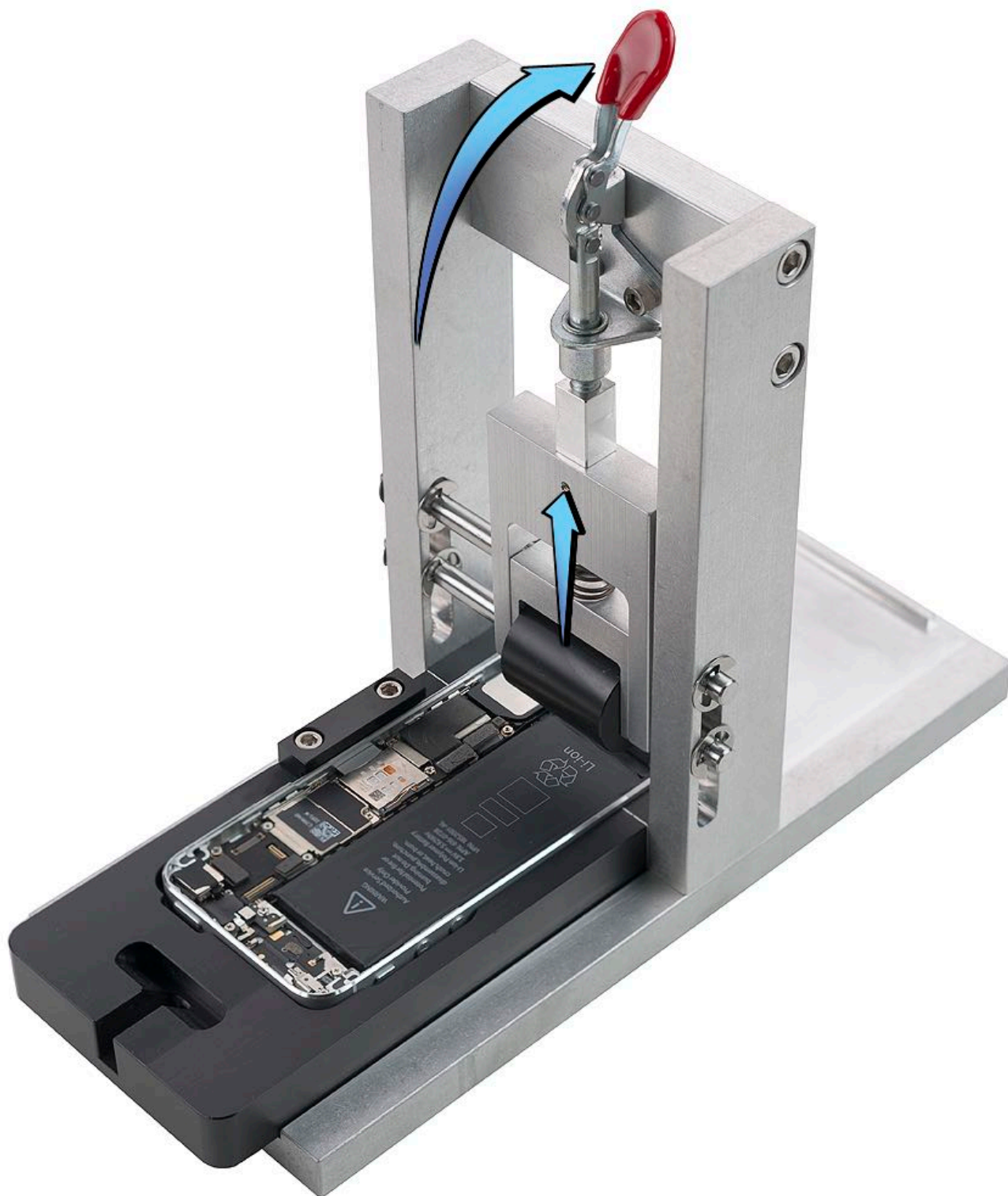
11. Slide tray back through vertical tower to original position.

Important: Only slide the tray back to the point where the white marks align with the front of the tower.

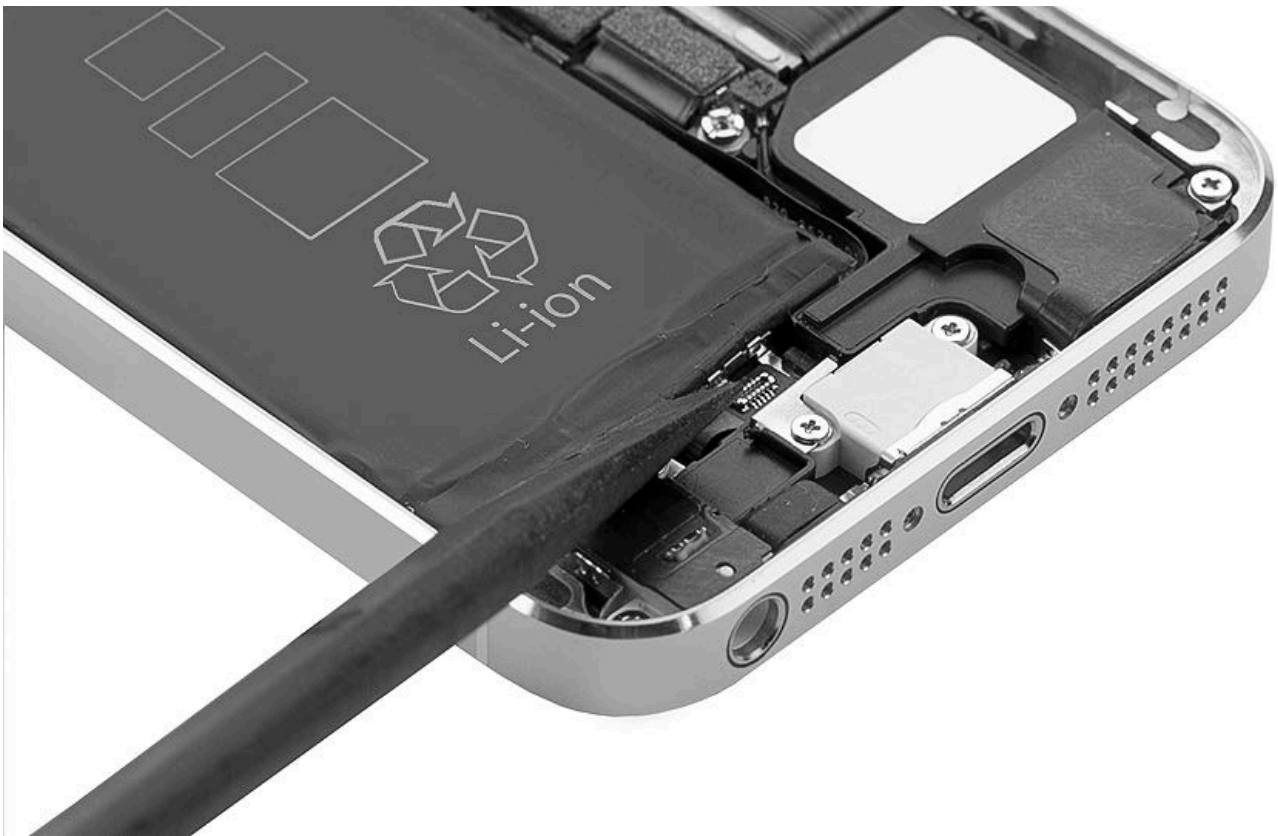


12. Raise red lever to raise pressure roller.

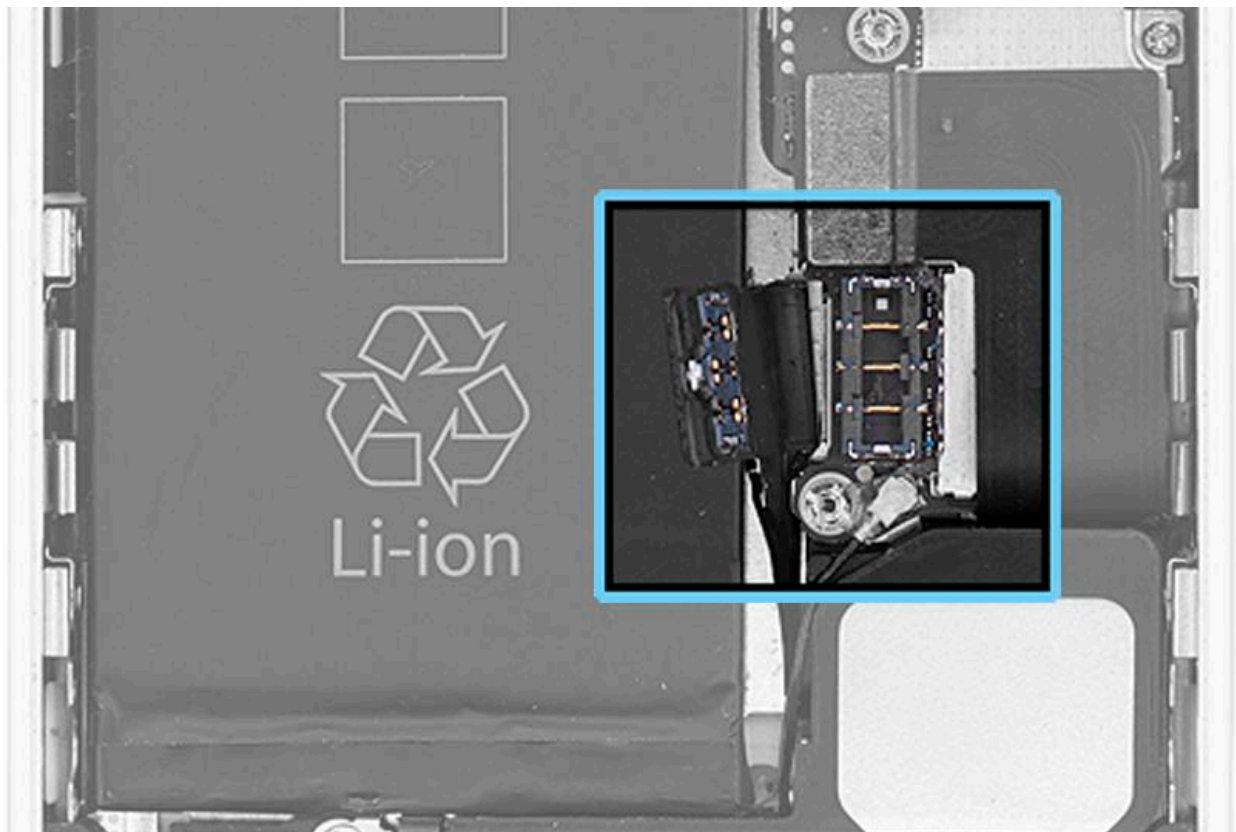
13. Remove the iPhone from fixture.



14. Fold new battery adhesive tab down toward battery, then slide folded tab between battery and speaker.



15. Use a black stick to disconnect battery connector from logic board.



16. Follow reassembly steps in [RP1114: Display Assembly](#).

17. Follow reassembly steps in [RP1113: Open Device](#).

18. Gently shake iPhone and listen for battery rattling sound. If battery is moving, then [Open Device](#), repeat battery reassembly steps 8–13, and [Close Device](#). If rattling still occurs, then replace battery with a known-good battery.

19. **Important:** Check the iPhone's operation with steps in [TP1045: Functional Test](#).

Speaker

First Steps

- [Open Device](#)
- [Disconnect Display Assembly](#)

Important: This procedure should only be performed by Apple-certified technicians.

For video instruction, refer to article [SV210: iPhone 5s and SE Speaker Replacement Video](#).



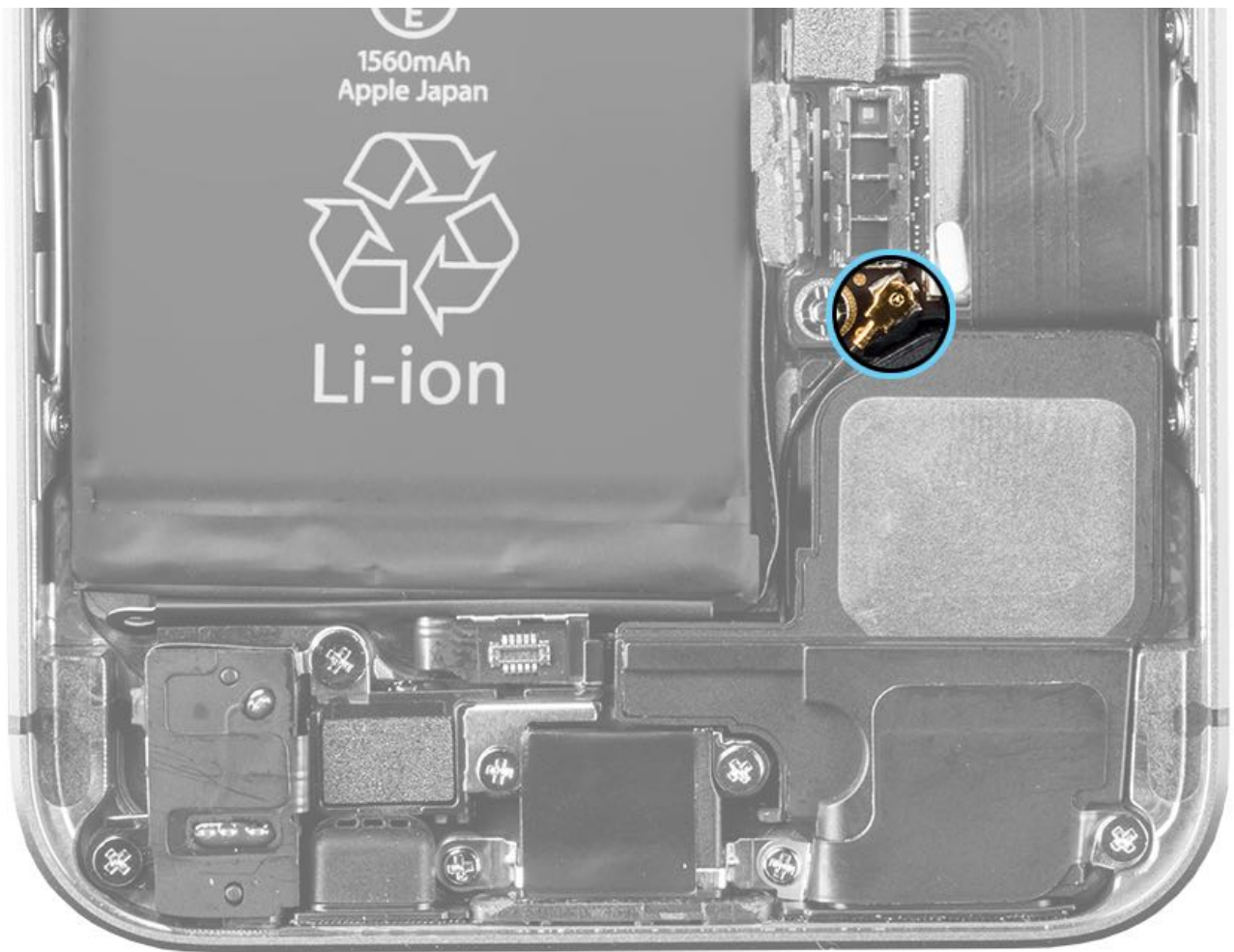
Tools

1. iPhone torque driver (blue) (923-0448)
2. JCIS bit (923-0246) for cross-head screws
3. ESD-safe tweezers
4. Nylon probe tool (black stick, 922-5065)
5. Can of compressed air (not shown)



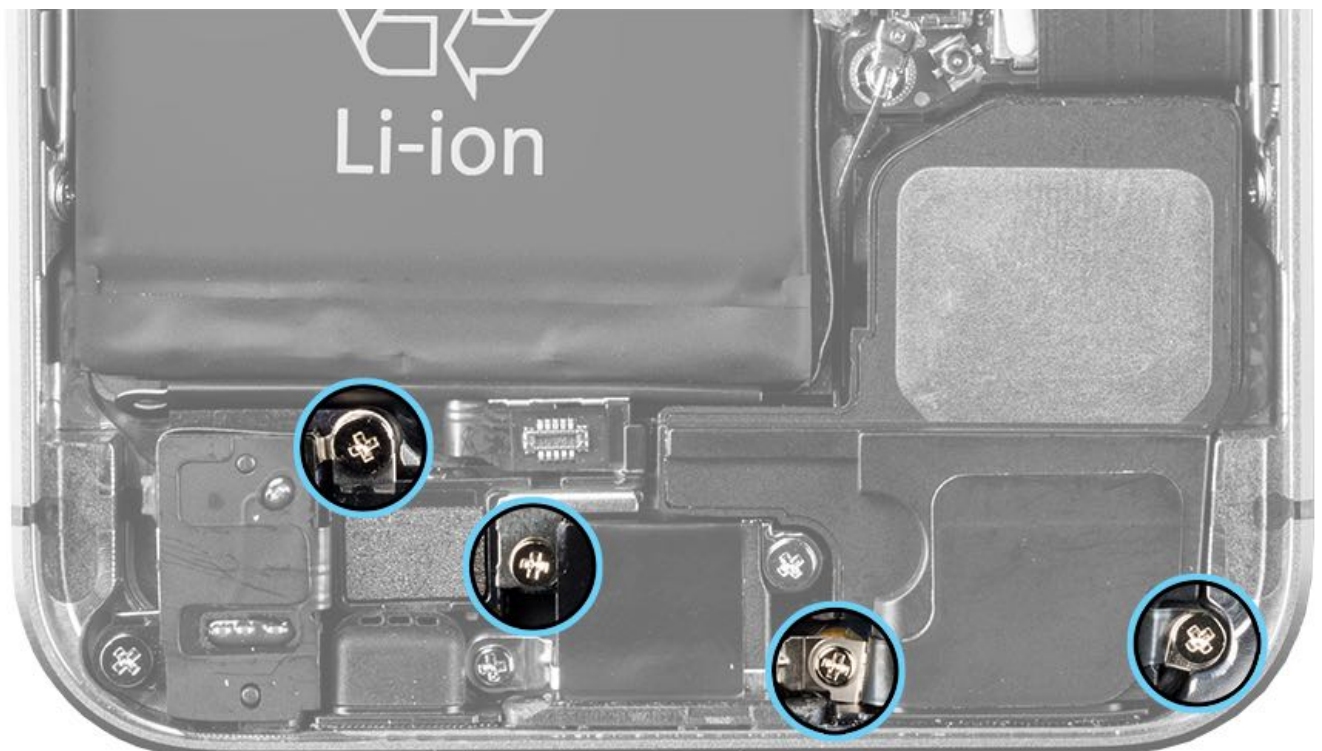
Steps For Removal

1. Carefully disconnect antenna coax cable from logic board using pointed end of black stick.



2. Remove and discard four cross-head screws using iPhone torque driver (blue) and JCIS bit.

Tip: Remove the screw on the right with tweezers.



3. Lift speaker up and remove from enclosure.

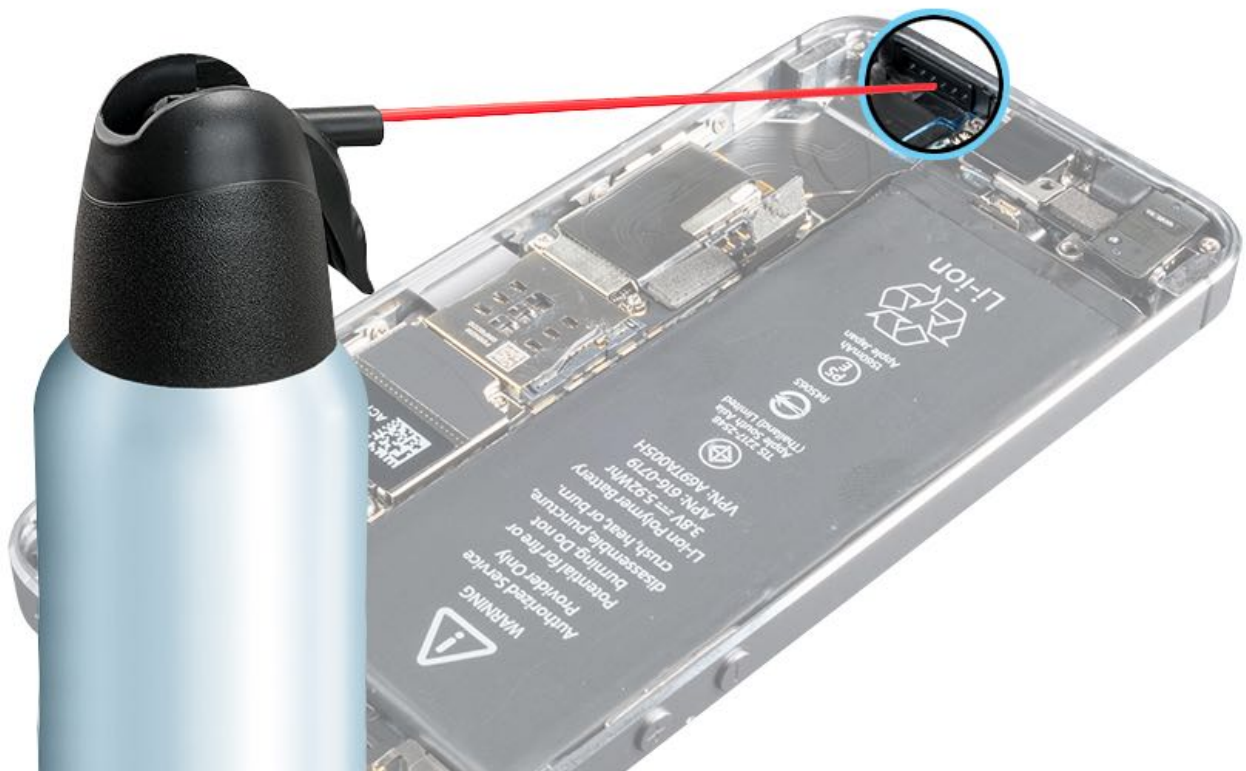
Note: The speaker has a small tab that tucks underneath the home button flex connector, and a second tab that tucks underneath the logic board.



4. Use compressed air to dislodge any debris from speaker grille. Aim compressed air from inside enclosure in direction shown.

Caution:

- Do not use compressed air from outside of enclosure, as it may cause debris to enter the iPhone.
- Do not tilt, shake, or turn can upside down before or during use, as liquid contents may be dispensed. Liquid contents may cause frostbite on contact with skin and may leave residue that is difficult to remove.



Steps For Reassembly

Important: Avoid trapping antenna coax cable or home button flex connector underneath speaker during installation.

1. Angle top end of speaker into enclosure.

Note: The speaker has a small tab that tucks underneath the home button flex connector, and a second tab that tucks underneath the logic board.

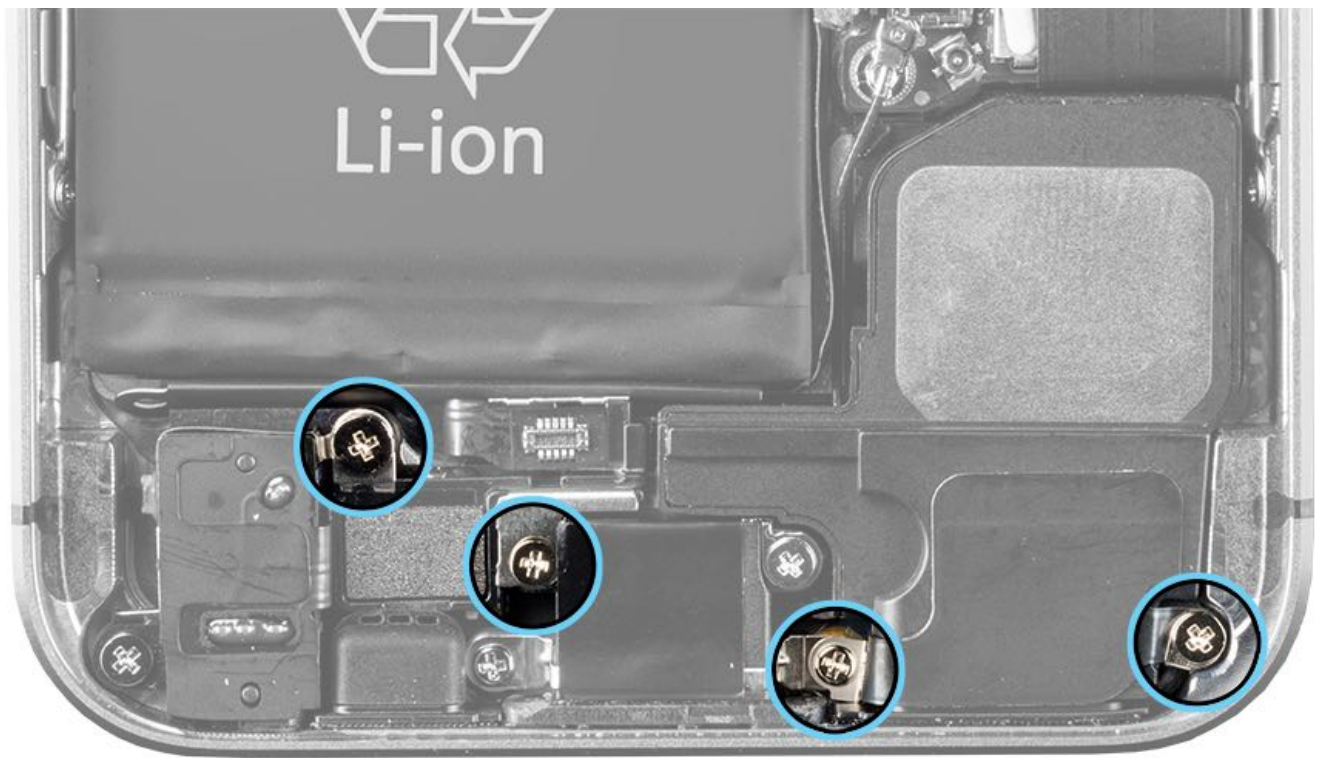
2. Press speaker down into enclosure.



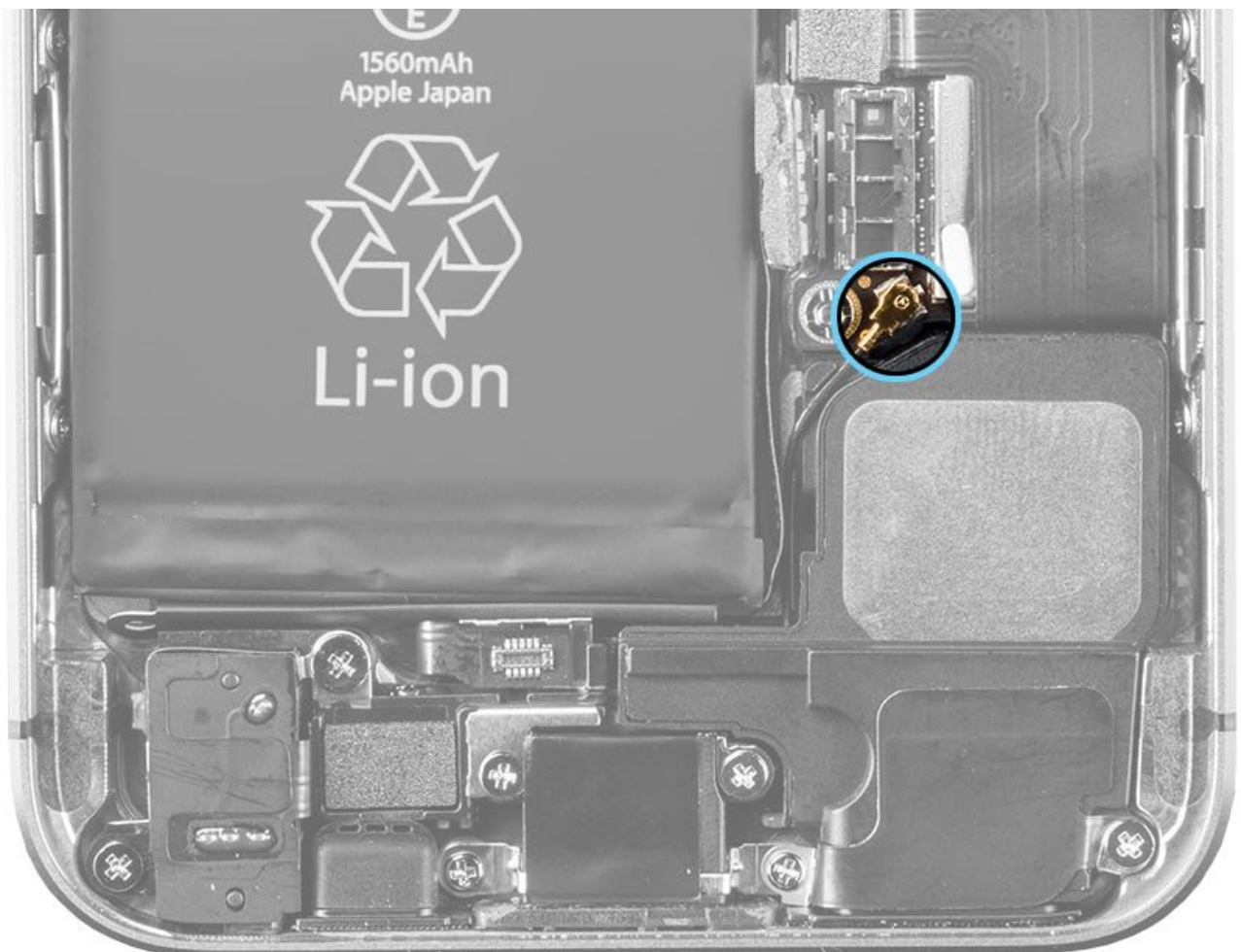
3. Install four **new** cross-head screws into speaker using iPhone torque driver (blue) and JCIS bit. Install screws from right to left.

- 923-0206, right (place with tweezers)
- 923-0178, middle right
- 923-0663, middle left
- 923-0722, left

Important: Do not reuse old screws.



4. Route antenna coax cable through channel on side of speaker.
5. Use a black stick to carefully press coax connector down onto logic board.



6. Follow the reassembly steps in article [RP1114: Disconnect Display Assembly](#).
7. Follow the reassembly steps in article [RP1113: Open Device](#).

8. **Important:** Check iPhone operation with steps in article [TP1045: Functional Test](#).

Completing a Repair

Test Functionality

Test the device according to the procedures outlined in [TP1045: Functional Test](#). Attempt to repeat the original issue(s) reported by the user, using whatever function(s) of the device were affected.

The device should be 100 percent operational before giving it back to the user.

Verify Cellular Account

Make sure the user's SIM card is installed and ask the user to verify their phone number is correct in Settings > Phone.

Clean Device

Clean the device with a micro-fiber polishing cloth. **DO NOT** use chemicals or liquids.

Handle Defective Parts

All defective modules should be returned to Apple. Reuse the packaging that contained the replacement part(s).

iPhone Functional Test

The purpose of this procedure is to determine the functional state of an iOS device before and after a repair. Before a repair, use this procedure to determine if any additional service is needed. After a repair, for devices running 10.3 or later, use Diagnostics Mode to run the AST 2 diagnostic suite(s) recommended in [TP1570: Diagnostics Mode](#) to verify the device's functionality. Devices running iOS 10.2.1 and earlier should continue to use the functional tests listed in this article. **Note:** Some feature-specific tests may not apply to the device under test.

Attempt to repeat the original issue or issues reported by the user and verify that no new issues are present after opening the device. If the user is reporting battery issues, use AST 2 to test the battery. Confirm that the device is fully operational before returning it to the user. Use AST 2 diagnostics to assist in testing for reported issues. See [TP1279: Supported Products and Tests](#) for more information on AST 2 diagnostics.

1. Test Cellular and Wi-Fi Connectivity, Video Playback, and Speaker Sound Quality
2. Test Bluetooth
3. Test Headset and Proximity Sensor
4. Test Bottom Mic, Speaker, and Receiver Sound Quality
5. Test Cameras, Rear Mic, and Front Mic
6. Test Multi-Touch and Accelerometer
7. Test Buttons, Switches, and Vibe
8. Test Ambient Light Sensor
9. Test Location Services
10. Test Touch ID (iPhone 5s, SE, 6, 6 Plus, 6s, 6s Plus, 7, 7 Plus, 8, 8 Plus)
11. Test 3D Touch and Taptic Engine (iPhone 6s and later)
12. Test True Tone Display (iPhone 8, 8 Plus, and X)
13. Test Face ID (iPhone X only)

1. Test Cellular and Wi-Fi Connectivity, Video Playback, and Speaker Sound Quality

- a. Run the Mobile Resource Inspector (MRI) diagnostic suite in AST 2, which tests for the presence of Wi-Fi hardware.
- b. Check that the user's SIM card is installed. Ask the user to verify that their phone number is correct in Settings > Phone.
- c. Make a test phone call to an approved toll-free number. This will test cellular connectivity and sound quality for phone calls.
- d. Go to Settings > Wi-Fi and connect to a known-good Wi-Fi network.



- e. Play video from apple.com and verify that the video and audio play correctly. This will test the video playback and the speaker. For iPhone 7, 7 Plus, 8, 8 Plus, X: Hold device in landscape orientation. Go to Settings > General > Accessibility and adjust balance to the left, and then to the right. Be sure that Mono audio is turned off. Replay the video to test the left and right speakers in isolation.
- f. Repeat steps d and e connected to a 2.4GHz network and connected to a 5GHz network, if available.

2. Test Bluetooth

- a. Run the MRI diagnostic suite in AST 2, which tests for the presence of Bluetooth hardware.
- b. Make a known-good Bluetooth device available locally. Check that the Bluetooth device is on and discoverable.
- c. On the customer's device, go to Settings > Bluetooth.
- d. Verify that Bluetooth is on. The device will search for nearby Bluetooth devices.



- e. Pair the user's device with the Bluetooth device.
- f. To unpair a device, tap the blue circle to the right of the device's name and then tap "Forget this Device."

3. Test Headset and Proximity Sensor

- a. Connect EarPods to iPhone.
- b. Launch the Voice Memos app.



- c. Record a short voice memo by tapping the red circle. Blow in to the headset microphone to verify functionality.
- d. While recording, cover the top front of the iPhone with your hand. The display should go blank.
- e. Remove your hand. The display should turn back on when the proximity sensor is uncovered.
- f. When finished recording, tap Done.
- g. Enter a name for the recording, then tap OK.
- h. Tap the recording.
- i. Tap the play (triangle) button to begin playback. Listen to the playback through the EarPods, and adjust volume using the headset remote control.
- j. Make a test phone call with a known-good SIM and with full cellular signal strength for at least one minute. During the call, verify the sound quality of the EarPods and headset microphone.

4. Test Bottom Mic, Speaker, and Receiver Sound Quality

a. Launch the Voice Memos app.



b. Record a short voice memo by tapping the red circle.

c. When finished recording, tap Done.

d. Enter a name for the recording, then tap OK.

e. Tap the recording.

f. Tap the play (triangle) button to begin playback. **Note:** To toggle between receiver and speaker, use the Speaker button in the top right corner of the display.

g. Make a test phone call with a known-good SIM and with full cellular signal strength for at least one minute. During the call, verify the sound quality of the receiver, speaker, and microphone.

5. Test Cameras, Rear Mic, and Front Mic

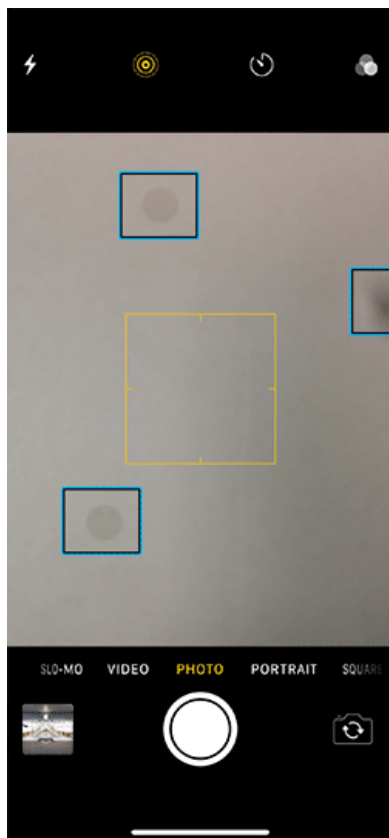
a. Run the MRI diagnostic suite in AST 2, which tests for the presence of front and rear cameras.

b. Remove any protective case that may interfere with the camera lens or flash.

c. Download the [iPhone Camera Test Image](#) (PDF) and print out a color copy on white, unlaminated paper. Do not modify, alter, or laminate the image.

d. Launch the Camera app. Aim the device at a clean, blank sheet of white paper.

e. Move the device slowly and inspect the preview image for anomalies, such as circles or dust spots.



f. Record video with the camera. Check the recording for video and audio quality. This will test the camera and rear mic.

g. Take photos and check focusing with the camera.

- Start in landscape orientation and hold the device eight inches (~20 cm) from the test image.
iPhone 6 or later: The test image should quickly come into focus.
Other models: Once steady, the yellow focus square should appear briefly and the test image should be in focus.
- Keep the device in landscape orientation and hold the device three feet (~1 m) from the test image.
iPhone 6 or later: The test image should quickly and seamlessly come into focus.
Other models: Once steady, the yellow focus square should appear shortly, with the test image eventually brought into focus.
- Rotate the device to portrait orientation and hold the device three feet (~1 m) from the test image.
iPhone 6 or later: In a well-lit room, the test image should stay in focus as you rotate. If the room is not well lit, the yellow focus square may appear. The image should not jump around or be severely out of focus during rotation.
Other models: Once steady, even though the test image is already in focus, the yellow focus square may still appear in the preview indicating that the camera is trying to refocus. This is normal. Once the focus is complete, the test image should still be in focus.
- Keep the device in portrait orientation and hold the device eight inches (~20 cm) from the test image.
iPhone 6 or later: The test image should quickly come into focus.
Other models: Once steady, the yellow focus square should appear shortly, with the test image eventually coming into focus.
- Verify that the primary colors are representative of the printed test image and that there are no dark spots near the edges of the photo.

h. Change the focus area and set the exposure: The yellow square on the screen shows the area where the camera is focusing the shot. Tap the screen to focus on the circle of the test image.

i. Set flash mode (camera or video mode): Tap the flash button, then tap On.

- If possible, take the photo in a dim or darkened area to show where the flash is lighting.
- Check that the flash is lighting the circle in the test image and that the flash is not shifted to one side.

j. Zoom in or out: Pinch the screen, then use the slider at the bottom of the screen to zoom in or out.

k. Touch the icon to select the FaceTime or TrueDepth camera. Repeat steps d–i above. This will test the

FaceTime or TrueDepth camera, front mic, and the Retina Flash. **Note:** The FaceTime or TrueDepth camera does not zoom, and only has a flash on iPhone 6s, 6s Plus, SE, 7, 7 Plus, 8, 8 Plus, X. The Retina Flash is only available in photo, portrait, and square modes. It may be easier to hold the printed test image in front of the iPhone to test the FaceTime camera.

Additional Testing for iPhone 5c and later:

Use the camera slow-motion mode to record short videos of the printed test image and verify video quality.

- a. Switch the camera to slow-motion mode and keep the device in either landscape or portrait orientation.
- b. Set to 1x zoom, hold the device eight inches (~20 cm) from the test image, tap to focus, and record a short video. Pinch the screen to zoom in and out.
- c. Stay in 1x zoom, hold the device three feet (~1 m) from the test image, tap to focus, and record a short video. Pinch the screen to zoom in and out.
- d. Tap 1x to switch to 2x zoom, hold the device three feet (~1 m) from the test image, tap to focus, and record a short video. Pinch the screen to zoom in and out.
- e. Stay in 2x zoom, hold the device 20 inches (~50 cm) from the test image, tap to focus, and record a short video. Pinch the screen to zoom in and out.

6. Test Multi-Touch and Accelerometer

- a. Run the following AST 2 diagnostic suites: use Multi-Touch to test for Multi-Touch response issues; use Unexpected Touch to test for overly sensitive touch response issues; use MRI to test for the presence of Multi-Touch and Accelerometer hardware.
- b. Launch the Calculator app to test all but the top section of the screen. Hold the device in a vertical plane (upright), not horizontal (flat). Tap each button on the calculator to verify activity.



- c. Rotate the device to the left to launch the scientific calculator. Tap each of the keys. Rotate the device 180 degrees to the right and tap each of the keys.



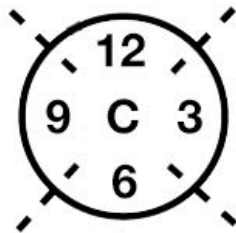
7. Test Buttons, Switches, and Vibe

Test buttons, switches, and vibe for expected functionality and tactility.

- a. Run each of the button and switch diagnostic suites in AST 2. Each suite tests the functionality of a specific button or switch.
- b. Test the Home button using the following steps, depending on model.

iPhone 6s, 6s Plus, SE, and earlier

- Test clicks and double-clicks on the Home button.
- Press and hold the Home button for Voice Control or Siri.
- With the display off, press the center of the Home button and verify that the display turns on.
- Use the pointed end of a black stick to repeat the same test for the top, bottom, left, and right edges of the Home button (as shown by the numbers in the image below). The display should turn on when pressing any of these five locations.



- If no functional issues are found after testing the button with a black stick, use your finger or thumb to test for button stiffness, looseness, or mechanical symptoms.

iPhone 7, 7 Plus, 8, 8 Plus

- Test single-clicks and double-clicks on the Home button.
- Press and hold the Home button for Voice Control or Siri.
- With the display off, press the center of the Home button and verify that the display turns on.
- When pressing the Home button, verify that the haptic feedback simulates a physical button press.
- If the Home button does not respond in the above steps, test Touch ID functionality in Section 10 of this article.

c. Use your finger to repeatedly press the volume up/down buttons and verify that the sound level indicator on the display is changing.

d. Use your finger to toggle the Ring/Silent switch back and forth and look for a bell icon on the screen.

e. Press the Ring/Silent switch and verify that the bell icon does not appear on the screen. **Note:** Do not toggle the switch.

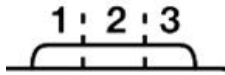
f. Test the vibrate function.

1. Go to Settings > Sounds > Ringtone > Vibration.
2. Choose S.O.S.
3. Verify that the phone vibrates in the correct pattern.

g. Locate the Sleep/Wake or Side button on the device, near the top right corner or right edge. **(All iPhone models)**

- Use the pointed end of a black stick to press the left side of the button (1 in image below) once, to put the device into sleep mode (the display will turn off).

- Use the pointed end of a black stick to press the center of the button (2 in image below) once, to wake the device.
- Use the pointed end of a black stick to press the right side of the button (3 in image below) once, to put the device into sleep mode (the display will turn off).
- Use your finger to press the button again to wake the device.
- Use your finger to press and hold down the button until “slide to power off” appears on the screen.



h. If no functional issues are found after testing buttons with a black stick, use your finger or thumb to test for button stiffness, looseness, or mechanical symptoms.

8. Test Ambient Light Sensor

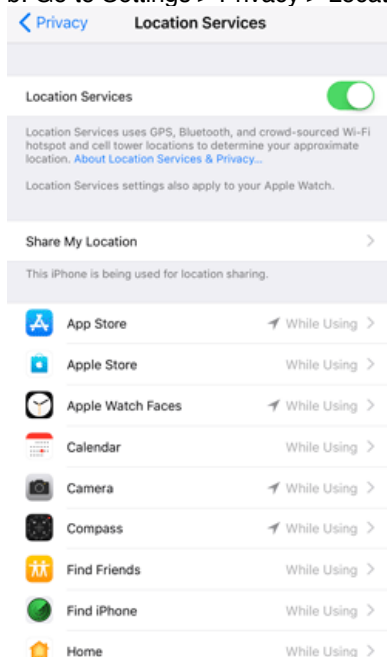
The ambient light sensor (ALS) automatically adjusts the display brightness to an appropriate level for the current ambient light conditions. The ALS brightens the display when using the device in a bright light environment, and dims the display in low light.

- Run the MRI diagnostic suite in AST 2, which tests for the presence of ALS hardware.
- Toggle Auto-Brightness off and then on in Settings > General > Accessibility > Display Accommodations.
- Press the Sleep/Wake or Side button to put the device into sleep mode.
- In a bright light environment, cover the top third of the front of the device to block the light (the base of your hand works well). The ALS is located near the receiver.
- Press the Sleep/Wake or Side button to wake the device. While the ALS is covered, the display should be dim.
- Uncover the top of the device. After a few seconds, the display should return to its normal brightness.

9. Test Location Services

Location services depend on data service availability. Data services are subject to change and may not be available in all areas. This may result in unavailable, inaccurate, or incomplete maps, directions, or location-based information. Maps uses Wi-Fi hotspots to determine the most accurate location. For more information, refer to article [HT203033: About privacy and Location Services in iOS 8 and later](#).

- Run the MRI diagnostic suite in AST 2, which tests for the presence of gyroscope and compass hardware.
- Go to Settings > Privacy > Location Services and turn on Location Services.

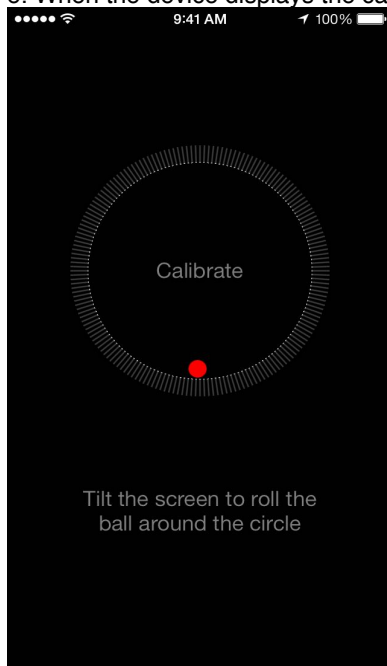


- Launch the Maps app and tap the arrow in the lower left corner of the screen. Maps should display the device's current location.



d. Open the Compass app.

e. When the device displays the calibration alert, tilt the screen to move the red ball around the circle.



f. Verify that when the iPhone is rotated, the heading shown on the screen changes according to the motion of the device.

10. Test Touch ID (iPhone 5s, SE, 6, 6 Plus, 6s, 6s Plus, 7, 7 Plus, 8, 8 Plus)

This test should be performed with the user to verify Touch ID functionality. Ensure that the Home button and your finger are clean and dry.

- Run the MRI diagnostic suite in AST 2, which tests for the presence of Touch ID hardware.
- Go to Settings > Touch ID & Passcode and tap "Add a Fingerprint..."
- Hold the device as you normally would when touching the Home button.
- Touch your finger to the Home button and hold it there until you feel a quick vibration or you are asked to lift your finger. **Tip:** Do not press the button, just touch lightly.
- Continue to touch and lift your finger slowly, making small adjustments to the position of your finger each time.
- Once the initial scanning is complete, you will be asked to adjust your grip in order to capture the edges of your

fingerprint.

g. Hold the device as you normally would when unlocking it, touching the adjacent outer areas of your fingertip instead of the center portion you initially scanned.

h. Press the Sleep/Wake or Side button to lock the screen.

i. Press the Home button or Sleep/Wake or Side button once to wake the device and keep your finger lightly on the Home button. The device will unlock when the fingerprint is recognized.

11. Test 3D Touch and Taptic Engine (iPhone 6s and later)

This test should be performed with the user to verify 3D Touch and Taptic Engine functionality.

Note: The iPhone must pass the Multi-Touch test above or the AST 2 diagnostic suites: Multi-Touch, Unexpected Touch, and MRI.

a. Go to Settings > General > Accessibility > 3D Touch and confirm that the 3D Touch setting is enabled and sensitivity is set to Medium. 3D Touch must be enabled for 3D Touch and Taptic Engine functionality.

b. Go to Settings > General > Accessibility > Vibration to enable the Taptic Engine.

c. Use the 3D Touch Sensitivity Test to check the Peek and Pop functions. Look for the visual feedback and feel for the haptic feedback.



Peek



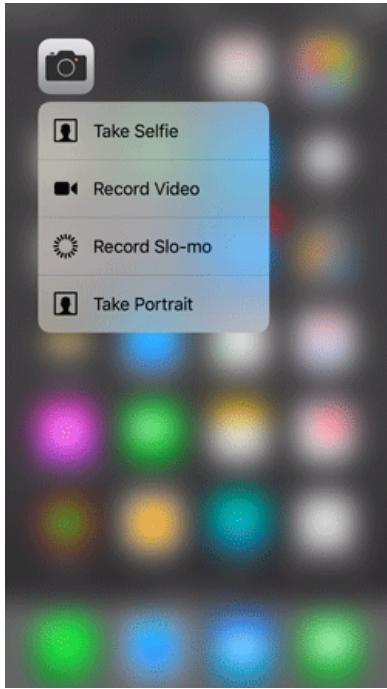
Pop



d. Press the Home button to return to the Home screen.

e. Hold the iPhone with the display perpendicular to the floor.

f. Firmly press on one icon in the center of the display to test 3D Touch. Look for visual feedback. If the app does not support 3D Touch, then the area around the app icon will blur momentarily and provide haptic feedback then return to the home screen. If the app supports 3D Touch, then a contextual menu will appear with a background blur.



g. Feel for haptic feedback when pressing the app icons.

h. Hold the iPhone with the display parallel to the floor and repeat steps f and g.

12. Test True Tone display (iPhone 8, 8 Plus, and X)

This test should be performed with the user to verify the True Tone display.

a. Toggle True Tone off and then on in Settings > Display & Brightness

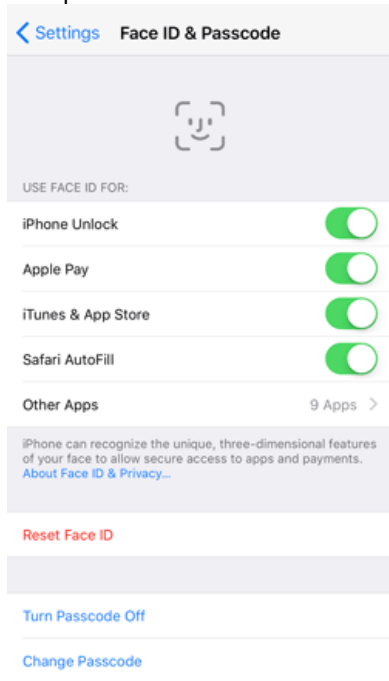
b. Make sure that the tint of the white displayed changes when True Tone is toggled on and off.

13. Test Face ID (iPhone X)

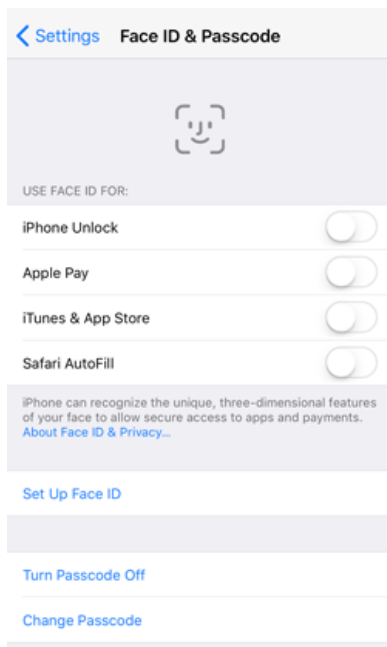
This test should be performed with the user to verify Face ID.

a. Go to Settings > Face ID & Passcode

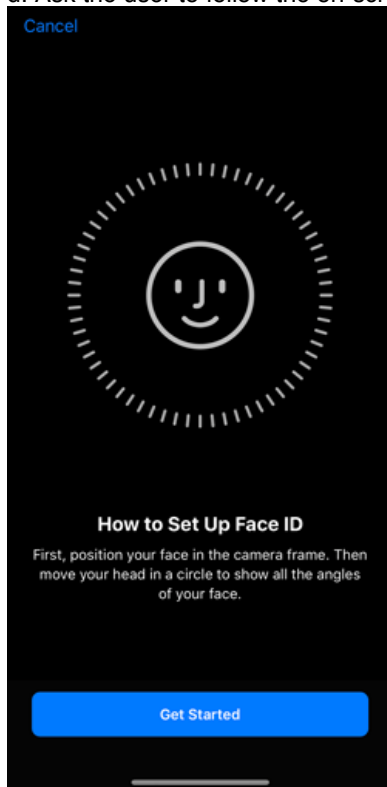
b. Tap Reset Face ID if Face ID has been enabled.



c. Tap Set Up Face ID.



d. Ask the user to follow the on-screen instructions.



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